

Jan Delaval  
please

Access DB#

80402

## SEARCH REQUEST FORM

### Scientific and Technical Information Center

Requester's Full Name: Ganapathy Krishnan Examiner #: 79271 Date: 11/18/02  
Art Unit: 1623 Phone Number 305-4837 Serial Number: 10454724  
Mail Box and Bldg/Room Location: 8508 Results Format Preferred (circle): PAPER DISK E-MAIL  
8BIT

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Solid and solution phase synthesis of heparin and other glycosaminoglycans  
Inventors (please provide full names): Peter H. Seehenger, Hernan Cregueira,  
Peter Schell

Earliest Priority Filing Date: \_\_\_\_\_

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Need structure search for claims

1, 5, 6, and 10.

AND

Search for method claims: 11 and 18.

SEARCHED  
INDEXED  
SERIALIZED  
FILED  
NOV 18 2002  
RECEIVED

Jan Delaval  
Reference Librarian  
Biotechnology & Chemical Library  
CM1 1E07 - 703-308-4498  
jan.delaval@uspto.gov

### STAFF USE ONLY

Searcher: Jan

### Type of Search

Searcher Phone #: 4458

NA Sequence (#)

STN

### Vendors and cost where applicable

Searcher Location: \_\_\_\_\_

AA Sequence (#)

Dialog

Date Searcher Picked Up: 11/19/02

Structure (#)

Questel/Orbit

Date Completed: 11/19/02

Bibliographic

Dr. Link

Searcher Prep & Review Time: \_\_\_\_\_

Litigation

Lexis/Nexis

Clerical Prep Time: 20

Fulltext

Sequence Systems

Online Time: +75

Patent Family

WWW/Internet

Other

Other (specify)

=> fil reg  
 FILE 'REGISTRY' ENTERED AT 10:55:14 ON 19 NOV 2002  
 USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
 PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
 COPYRIGHT (C) 2002 American Chemical Society (ACS)

Property values tagged with IC are from the ZIC/VINITI data file  
 provided by InfoChem.

STRUCTURE FILE UPDATES: 18 NOV 2002 HIGHEST RN 473870-51-8  
 DICTIONARY FILE UPDATES: 18 NOV 2002 HIGHEST RN 473870-51-8

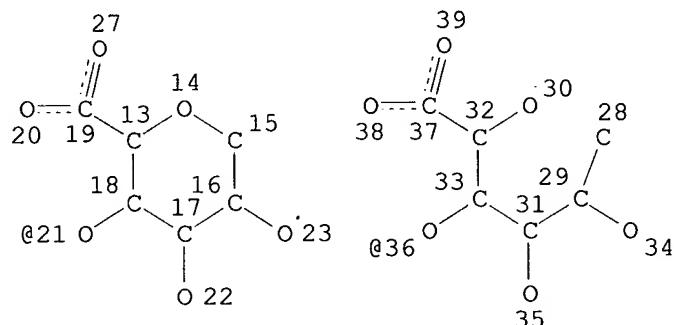
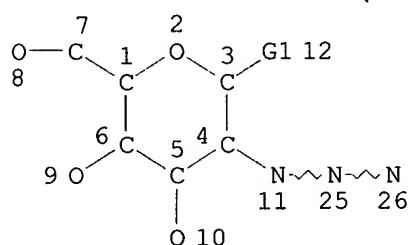
TSCA INFORMATION NOW CURRENT THROUGH MAY 20, 2002

Please note that search-term pricing does apply when  
 conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. See HELP PROPERTIES for more information. See STNote 27, Searching Properties in the CAS Registry File, for complete details:  
<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

=> d sta que 116  
 L1 STR

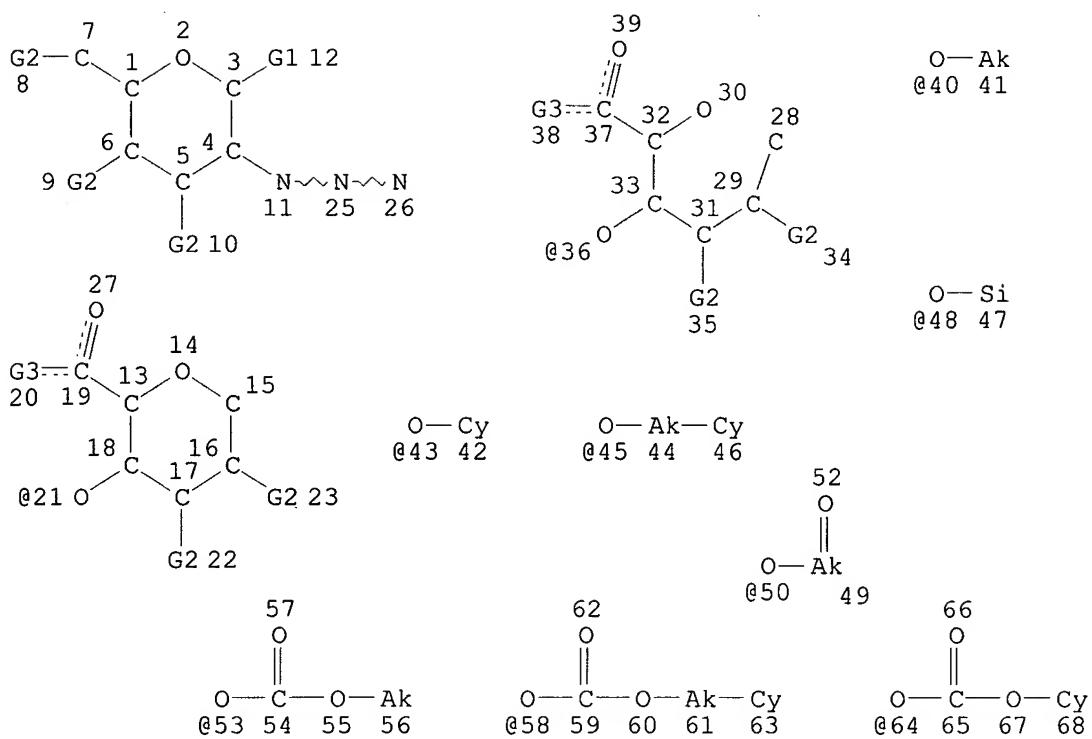


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 DEFAULT ECLEVEL IS LIMITED

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 NUMBER OF NODES IS 38

STEREO ATTRIBUTES: NONE  
 L3 296 SEA FILE=REGISTRY SSS FUL L1  
 L4 STR

Jan Delaval  
 Reference Librarian  
 Biotechnology & Chemical Library  
 CM1 1E07 - 703-308-4498  
 jan.delaval@uspto.gov



VAR G1=21/36

VAR G2=OH/40/43/45/48/50/53/58/64

VAR G3=OH/40/43/45

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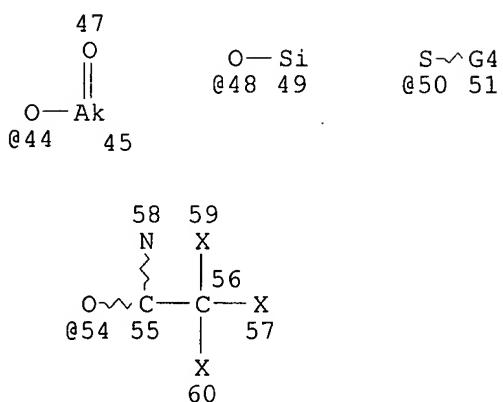
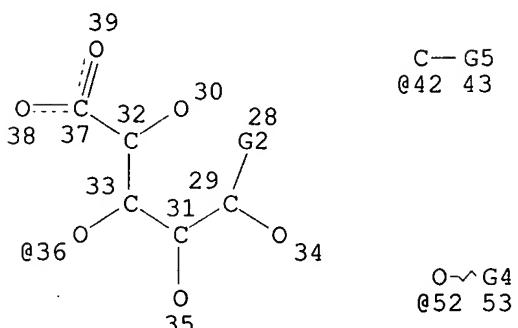
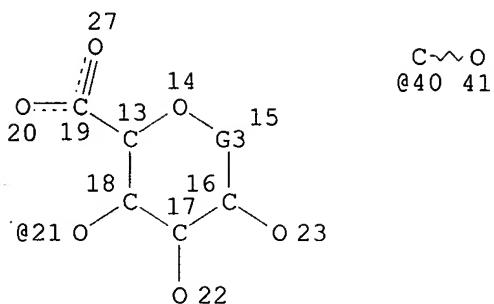
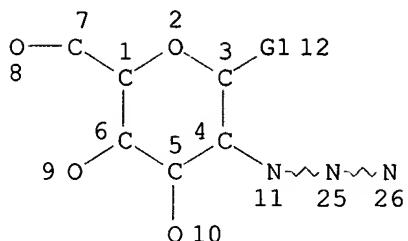
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STEREO ATTRIBUTES: NONE

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 VAR G3=C/42  
 VAR G4=AK/CY  
 VAR G5=OH/44/48/X/50/52/54

NODE ATTRIBUTES:

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 DEFAULT ECLEVEL IS LIMITED

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RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 58

STEREO ATTRIBUTES: NONE

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 C72H82N6O25 OR C62H76N6O26 OR C46H63N7O23 OR C74H90N6O24 OR  
 C161H184N12O49 OR C50H62N6O21 OR C68H89CLN6O26SI OR C122H141N90  
 37 OR C49H53N3O15 OR C60H74N6O25 OR C71H94N6O27SI)  
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       C55H62N6O19 OR C49H54N4O15 OR C53H59BRN6O17 OR C53H59CLN6O17  
       OR C55H60CL3N7O18 OR C54H62N6O18 OR C47H54N6O15 OR C55H60CL3N7O  
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=> d his

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 L3 296 S L1 FUL  
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 L4 STR L1  
 L5 9 S L4 CSS SAM SUB=L3  
 L6 137 S L4 CSS FUL SUB=L3  
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 L7 STR L1  
 L8 STR L7  
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 L15 16 S L14 AND (C55H60CL3N7O18 OR C55H62N6O19 OR C49H54N4O15 OR C53H  
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L23 0 S L16 OR L22

FILE 'USPATFULL, USPAT2' ENTERED AT 10:51:51 ON 19 NOV 2002

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FILE 'HCAPLUS' ENTERED AT 10:52:25 ON 19 NOV 2002

L25 28 S L16 OR L22  
 L26 2 S L25 AND (SEEBERGER ? OR ORGUEIRA ? OR SCHELL ?)/AU  
 L27 26 S L25 AND (PD<=20010123 OR PRD<=20010123 OR AD<=20010123)  
 L28 1 S L25 NOT L26, L27  
 L29 25 S L27 NOT L26

FILE 'REGISTRY' ENTERED AT 10:55:14 ON 19 NOV 2002

=> fil uspatall

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CA INDEXING COPYRIGHT (C) 2002 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'USPAT2' ENTERED AT 10:55:31 ON 19 NOV 2002

CA INDEXING COPYRIGHT (C) 2002 AMERICAN CHEMICAL SOCIETY (ACS)

=>

=> d 124 bib abs hitstr tot

L24 ANSWER 1 OF 6 USPATFULL

AN 91:7120 USPATFULL

TI Derivatives of the uronic acid

IN Choay, Jean, Paris, France

Jacquinet, Jean-Claude, Orleans-La-Source, France

Petitou, Maurice, Paris, France

Sinay, Pierre, Orleans, France

PA Choay S.A., Paris, France (non-U.S. corporation)

PI US 4987223 19910122

AI US 1982-453731 19821027 (6)

PRAI FR 1981-24132 19811223

FR 1982-621 19820115

FR 1982-1575 19820201

FR 1982-2526 19820216

FR 1982-9392 19820528

FR 1982-10891 19820622

FR 1982-10892 19820622

FR 1982-13804 19820806

FR 1982-15803 19820920

FR 1982-15804 19820920

FR 1982-18001 19821027

DT Utility

FS Granted

EXNAM Primary Examiner: Brown, Johnnie R.; Assistant Examiner: Peselev, Elli

LREP Davis Hoxie Faithfull & Hapgood

CLMN Number of Claims: 6

ECL Exemplary Claim: 1

DRWN 16 Drawing Figure(s); 14 Drawing Page(s)

LN.CNT 1591

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention relates to derivatives with a uronic acid structure having substituents selected among a reactive group, a functionalisable group and --OH functions blocked by protective groups. These derivatives are useful for preparing glycosides, particularly enzyme substrates.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

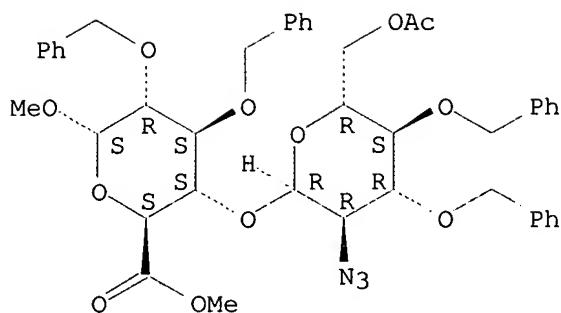
IT 85750-89-6P

(prepn. and sapon. of)

RN 85750-89-6 USPATFULL

CN .alpha.-D-Glucopyranosiduronic acid, methyl 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



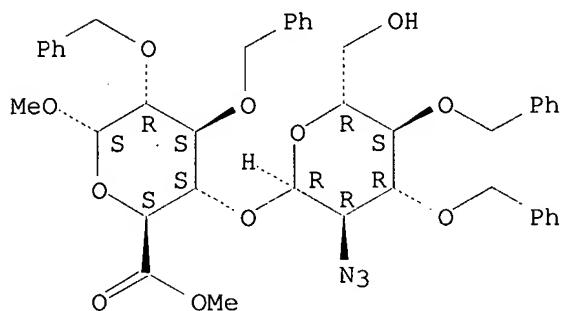
IT 85743-92-6P

(prepn. and sulfonylation of)

RN 85743-92-6 USPATFULL

CN .alpha.-D-Glucopyranosiduronic acid, methyl 4-O-[2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L24 ANSWER 2 OF 6 USPATFULL

AN 90:57857 USPATFULL

TI Method for carrying out the organic synthesis of oligosaccharides containing galactosamine-uronic acid patterns, new oligosaccharides obtained and biological applications thereof

IN Jacquinet, Jean-Claude, Orleans-La Source, France

Petitou, Maurice, Paris, France

Sinay, Pierre, Orleans, France

Choay, Jean, Paris, France

PA Choay, S.A., Paris, France (non-U.S. corporation)

PI US 4943630 19900724 ~~19900724~~

AI US 1986-856855 19860421 (6)

DCD 20030819

RLI Continuation of Ser. No. US 1984-624628, filed on 26 Jun 1984, now abandoned

PRAI FR 1982-18003 19821027

DT Utility

FS Granted

EXNAM Primary Examiner: Griffin, Ronald W.

LREP Davis, Hoxie, Faithfull &amp; Hapgood

CLMN Number of Claims: 53

ECL Exemplary Claim: 1

DRWN 12 Drawing Figure(s); 9 Drawing Page(s)

LN.CNT 2205

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Novel processes for synthesizing acid mucopolysaccharide fragments

having from 2-12 saccharides and substantially pure products of a single structure produced thereby. Condensations are disclosed between a first protected saccharide and a second protected saccharide to form a protected condensation product having units linked in the manner found in chondroitin sulfate and dermatan sulfate and having protecting groups thereon which allow selective positioning of functional groups, in particular sulfate, at desired positions. Other condensations are disclosed in which a protected condensation product is formed which can be elongated, and has protecting groups thereon which allow selective positioning of functional groups, in particular sulfate, at desired positions. Also disclosed is a process for selectively positioning functional groups on a protected acid mucopolysaccharide having from 2-12 units.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

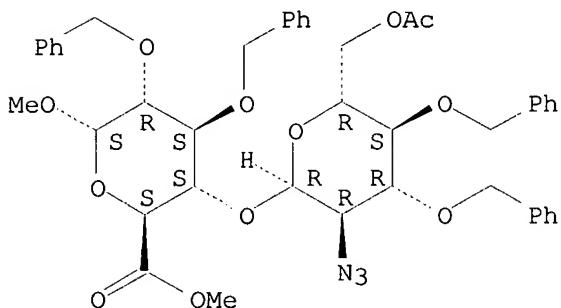
IT 85750-89-6P

(prepn. and sapon. of)

RN 85750-89-6 USPATFULL

CN .alpha.-D-Glucopyranosiduronic acid, methyl 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



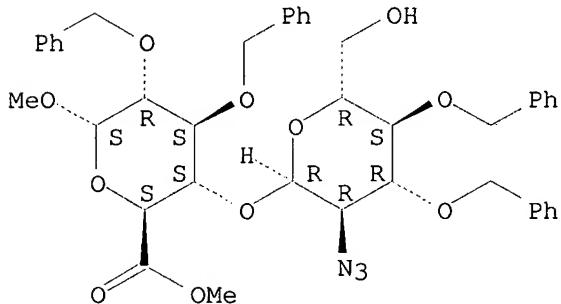
IT 85743-92-6P

(prepn. and sulfonylation of)

RN 85743-92-6 USPATFULL

CN .alpha.-D-Glucopyranosiduronic acid, methyl 4-O-[2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L24 ANSWER 3 OF 6 USPATFULL

AN 89:25905 USPATFULL

TI Process for the organic synthesis of oligosaccharides and derivatives

thereof  
 IN Petitou, Maurice, Paris, France  
 Jacquinet, Jean-Claude, Orleans la Source, France  
 Sinay, Pierre, Orleans la Source, France  
 Choay, Jean, Paris, France  
 Lormeau, Jean-Claude, Maromme, France  
 Nassr, Mahmoud, Alexandria, Egypt  
 PA Choay, S.A., Paris, France (non-U.S. corporation)  
 PI US 4818816 19890404 ← ✓  
 AI US 1987-115593 19871026 (7)  
 DCD 20030819  
 RLI Continuation of Ser. No. US 1983-457931, filed on 14 Jan 1983, now abandoned which is a continuation-in-part of Ser. No. US 1982-451615, filed on 20 Dec 1982, now patented, Pat. No. US 4607025

PRAI FR 1981-8472 19810428  
 FR 1982-621 19820115  
 FR 1982-1675 19820201  
 FR 1982-2526 19820216  
 FR 1982-9392 19820528  
 FR 1982-10892 19820622  
 FR 1982-10891 19820622  
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 FR 1982-13804 19820806  
 FR 1982-15803 19820920  
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 FR 1982-18003 19821027

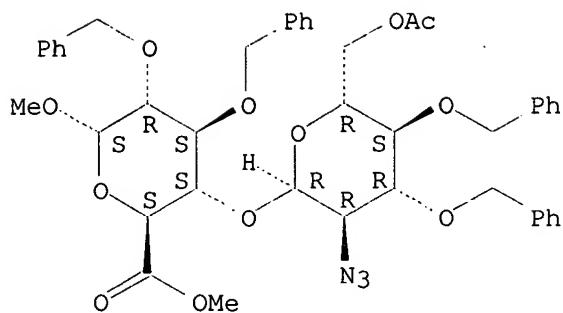
DT Utility  
 FS Granted  
 EXNAM Primary Examiner: Rollins, John  
 LREP Davis, Hoxie, Faithfull & Hapgood  
 CLMN Number of Claims: 61  
 ECL Exemplary Claim: 1  
 DRWN 32 Drawing Figure(s); 32 Drawing Page(s)  
 LN.CNT 3919  
 CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention relates to a process for the organic synthesis of oligosaccharides constituting or comprising fragments of acid mucopolysaccharides comprising the reaction of two compounds constituted or terminated by units of glucosamine structure and of uronic acid structure respectively, said units being specifically substituted. This process particularly enables valuable anticoagulant drugs to be obtained.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

IT 85750-89-6P  
 (prepn. and sapon. of)  
 RN 85750-89-6 USPATFULL  
 CN .alpha.-D-Glucopyranosiduronic acid, methyl 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



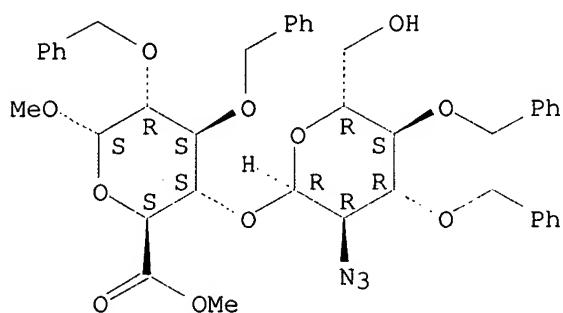
IT 85743-92-6P

(prepn. and sulfonylation of)

RN 85743-92-6 USPATFULL

CN .alpha.-D-Glucopyranosiduronic acid, methyl 4-O-[2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L24 ANSWER 4 OF 6 USPATFULL

AN 89:7549 USPATFULL

TI Oligosaccharides and their biological applications

IN Petitou, Maurice, Paris, France

Lormeau, Jean-Claude, Maromme, France

Choay, Jean, Paris, France

Jacquinet, Jean-Claude, Orleans, la Source, France

Sinay, Pierre, Orleans, la Source, France

PA Choay S.A., Paris, France (non-U.S. corporation)

PI US 4801583 19890131 ←

AI US 1985-734445 19850515 (6)

RLI Continuation-in-part of Ser. No. US 1983-457931, filed on 14 Jan 1983, now abandoned

PRAI FR 1982-621 19820115

FR 1982-1575 19820201

FR 1982-2526 19820216

FR 1982-9392 19820528

FR 1982-10891 19820622

FR 1982-10892 19820622

FR 1982-11679 19820702

FR 1982-13804 19820806

FR 1982-15804 19820920

FR 1982-15803 19820920

FR 1982-18003 19821027

FR 1984-7589 19840516

DT Utility

FS Granted

EXNAM Primary Examiner: Brown, J. R.; Assistant Examiner: Peselel, Elli

LREP Davis Hoxie Faithfull &amp; Hapgood

CLMN Number of Claims: 6

ECL Exemplary Claim: 1,5

DRWN 5 Drawing Figure(s); 5 Drawing Page(s)

LN.CNT 895

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The oligosaccharides of the invention contain or are constituted by a tetrasaccharide enchainment of the formula: ##STR1## in which R.sub.1 represents an organic anion, R.sub.2 is identical to R.sub.1 or represents a hydrogen atom, N.sub.1 and N.sub.2 represent a functional amino group.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

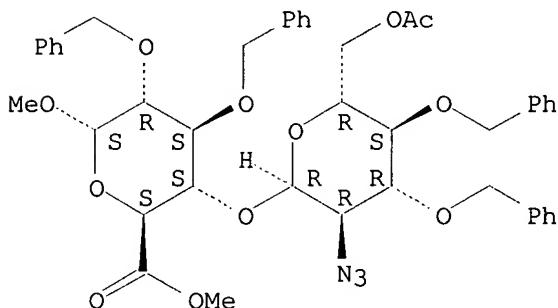
IT 85750-89-6P

(prepn. and sapon. of)

RN 85750-89-6 USPATFULL

CN .alpha.-D-Glucopyranosiduronic acid, methyl 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



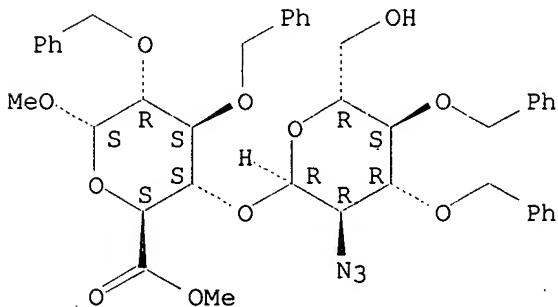
IT 85743-92-6P

(prepn. and sulfonylation of)

RN 85743-92-6 USPATFULL

CN .alpha.-D-Glucopyranosiduronic acid, methyl 4-O-[2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L24 ANSWER 5 OF 6 USPATFULL

AN 88:62485 USPATFULL

TI Disaccharides formed by patterns having a glucosamine and uronic acid

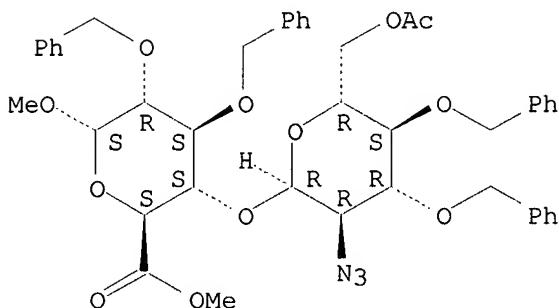
IN structure, preparation thereof and biological applications  
 Petitou, Maurice, Paris, France  
 Sinay, Pierre, Orleans, France  
 Choay, Jean, Paris, France  
 Lormeau, Jean-Claude, Maromme, France  
 PA Choay S.A., Paris, France (non-U.S. corporation)  
 PI US 4774231 19880927 C  
 AI US 1986-888527 19860721 (6)  
 RLI Continuation of Ser. No. US 1982-451615, filed on 20 Dec 1982, now  
 patented, Pat. No. US 4607025  
 PRAI FR 1981-8472 19810428  
 DT Utility  
 FS Granted  
 EXNAM Primary Examiner: Griffin, Ronald W.  
 LREP Davis Hoxie Faithfull & Hapgood  
 CLMN Number of Claims: 26  
 ECL Exemplary Claim: 1  
 DRWN 4 Drawing Figure(s); 4 Drawing Page(s)  
 LN.CNT 512  
 CAS INDEXING IS AVAILABLE FOR THIS PATENT.  
 AB 1,4.alpha.disaccharides of formula: ##STR1## with Z representing a  
 nitrogenous functional group,

M hydrogen or a sulphate or acetyl group,  
 R an alkyl radical of 1 to 4 carbon atoms and  
 A functional group such as an acid group, or a derivative.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

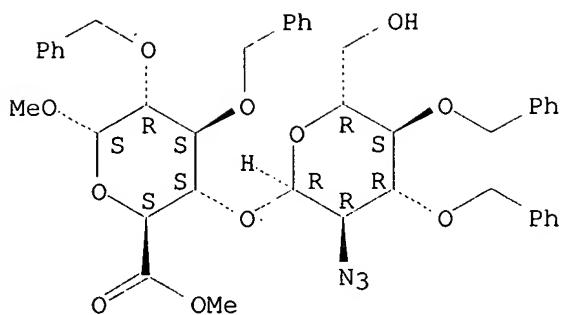
IT 85750-89-6P  
 (prepn. and sapon. of)  
 RN 85750-89-6 USPATFULL  
 CN .alpha.-D-Glucopyranosiduronic acid, methyl 4-O-[6-O-acetyl-2-azido-2-  
 deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-  
 (phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



IT 85743-92-6P  
 (prepn. and sulfonylation of)  
 RN 85743-92-6 USPATFULL  
 CN .alpha.-D-Glucopyranosiduronic acid, methyl 4-O-[2-azido-2-deoxy-3,4-bis-O-  
 (phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-,  
 methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L24 ANSWER 6 OF 6 USPATFULL

AN 86:46638 USPATFULL

TI Disaccharides having a glucosamine and uronic acid structure, and biological applications thereof

IN Petitou, Maurice, Paris, France  
Sinay, Pierre, Orleans, France  
Choay, Jean, Paris, France

Lormeau, Jean-Claude, Maromme, France

PA Choay S.A., Paris, France (non-U.S. corporation)

PI US 4607025 19860819

AI US 1982-451615 19821220 (6)

DT Utility

FS Granted

EXNAM Primary Examiner: Brown, Johnnie R.

LREP Weiser & Stapler

CLMN Number of Claims: 12

ECL Exemplary Claim: 1

DRWN 4 Drawing Figure(s); 4 Drawing Page(s)

LN.CNT 415

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB 1,4 .alpha. disaccharides of formula: ##STR1## with Z representing a nitrogenous functional group,

M hydrogen or a sulphate or acetyl group,

R an alkyl radical of 1 to 4 carbon atoms and

A a functional group such as an acid group, or a derivative.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

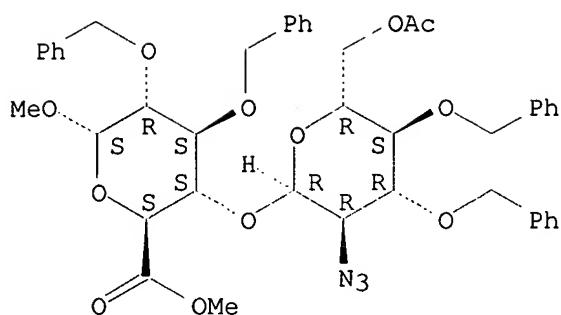
IT 85750-89-6P

(prepn. and deacetylation of)

RN 85750-89-6 USPATFULL

CN .alpha.-D-Glucopyranosiduronic acid, methyl 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



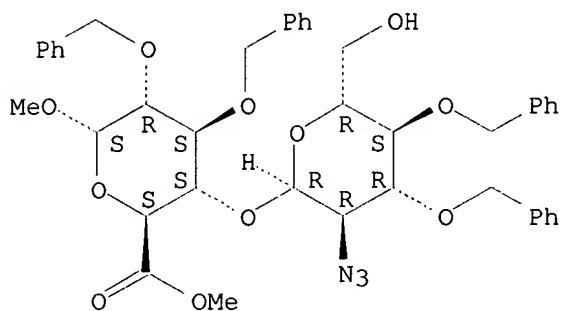
IT 85743-92-6P

(prepn. and sulfation of)

RN 85743-92-6 USPATFULL

CN .alpha.-D-Glucopyranosiduronic acid, methyl 4-O-[2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



=&gt; fil hcaplus

FILE 'HCAPLUS' ENTERED AT 10:56:32 ON 19 NOV 2002

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FILE COVERS 1907 - 19 Nov 2002 VOL 137 ISS 21  
 FILE LAST UPDATED: 18 Nov 2002 (20021118/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

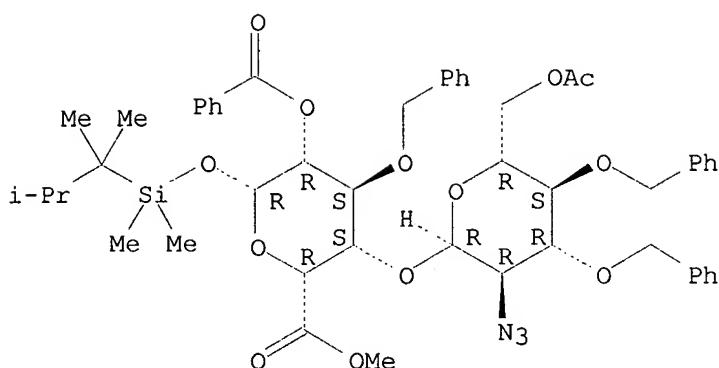
CAS roles have been modified effective December 16, 2001. Please check your SDI profiles to see if they need to be revised. For

information on CAS roles, enter HELP ROLES at an arrow prompt or use the CAS Roles thesaurus (/RL field) in this file.

=> d 129 bib abs hitstr retable tot

L29 ANSWER 1 OF 25 HCPLUS COPYRIGHT 2002 ACS  
 AN 2001:688082 HCPLUS  
 DN 136:53969  
 TI The activation of fibroblast growth factors by heparin: synthesis, structure, and biological activity of heparin-like oligosaccharides  
 AU De Paz, Jose-Luis; Angulo, Jesus; Lassaletta, Jose-Maria; Nieto, Pedro M.; Redondo-Horcajo, Mariano; Lozano, Rosa M.; Gimenez-Gallego, Guillermo; Martin-Lomas, Manuel  
 CS Grupo de Carbohidratos, Instituto de Investigaciones Quimicas, CSIC, Seville, 41092, Spain  
 SO ChemBioChem (2001), 2(9), 673-685  
 CODEN: CBCHFX; ISSN: 1439-4227  
 PB Wiley-VCH Verlag GmbH  
 DT Journal  
 LA English  
 AB An effective strategy has been designed for the synthesis of oligosaccharides of different sizes structurally related to the regular region of heparin; this is illustrated by the prepn. of hexasaccharide 1 and octasaccharide 2. This synthetic strategy provides the oligosaccharide sequence contg. a D-glucosamine unit at the nonreducing end that is not available either by enzymic or chem. degrdn. of heparin. It may permit, after slight modifications, the prepn. of oligosaccharide fragments with different charge distribution as well. NMR spectroscopy and mol. dynamics simulations have shown that the overall structure of 1 in soln. is a stable right-hand helix with four residues per turn. Hexasaccharide 1 and, most likely, octasaccharide 2 are, therefore, chem. well-defined structural models of naturally occurring heparin-like oligosaccharides for use in binding and biol. activity studies. Both compds. 1 and 2 induce the mitogenic activity of acid fibroblast growth factor (FGF1), with the half-max. activating concn. of 2 being equiv. to that of heparin. Sedimentation equil. anal. with compd. 2 suggests that heparin-induced FGF1 dimerization is not an abs. requirement for biol. activity.  
 IT 382614-14-4P 382614-15-5P 382614-16-6P  
 382614-22-4P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (activation of fibroblast growth factors by heparin synthesis structure and biol. activity of heparin-like oligosaccharides)  
 RN 382614-14-4 HCPLUS  
 CN .beta.-L-Idopyranuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-1-O-[dimethyl(1,1,2-trimethylpropyl)silyl]-3-O-(phenylmethyl)-, methyl ester, 2-benzoate (9CI)  
 (CA INDEX NAME)

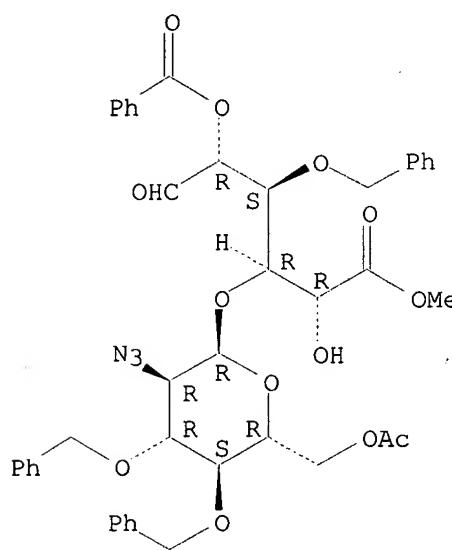
Absolute stereochemistry. Rotation (+).



RN 382614-15-5 HCAPLUS

CN L-Iduronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-benzoate (9CI) (CA INDEX NAME)

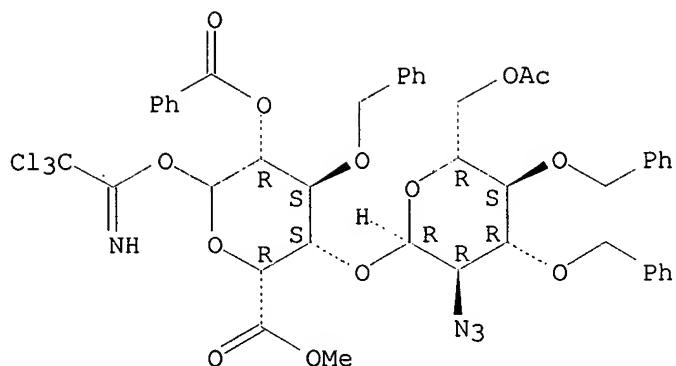
Absolute stereochemistry.



RN 382614-16-6 HCAPLUS

CN L-Idopyranuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-benzoate 1-(2,2,2-trichloroethanimidate) (9CI) (CA INDEX NAME)

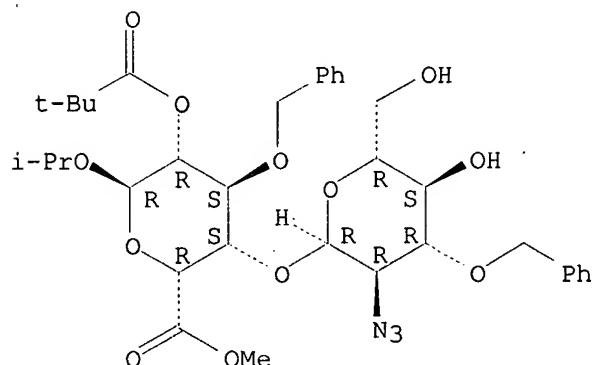
Absolute stereochemistry.



RN 382614-22-4 HCAPLUS

CN .alpha.-L-Idopyranosiduronic acid, 1-methylethyl 4-O-[2-azido-2-deoxy-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-(2,2-dimethylpropanoate) (9CI) (CA INDEX NAME)

Absolute stereochemistry.



## RETABLE

Referenced Author (RAU)	Year (R PY)	VOL (R VL)	PG (R PG)	Referenced Work (RWK)	Referenced File (HCAPLUS)
Altona, C	1995	16	56	J Comput Chem	
Avizer, D	1994	269	114	J Biol Chem	
Bax, A	1985	65	355	J Magn Reson	HCAPLUS
Case, D	1997			AMBER5	
Casu, B	1985	43	51	Adv Carbohydr Chem B	HCAPLUS
Casu, B	1986	322	215	Nature	HCAPLUS
Conrad, H	1998			Heparin-binding Prot	
Davis, A	1991	93	54	J Magn Reson	
de Paz, J	2000			PhD Thesis, Universi	
Digabriele, A	1998	393	812	Nature	HCAPLUS
Faham, S	1998	8	578	Curr Opin Struct Bio	HCAPLUS
Faham, S	1996	271	1116	Science	HCAPLUS
Ferro, D	1990	195	157	Carbohydr Res	HCAPLUS
Ferro, D	1986	108	6774	J Am Chem Soc	
Friesel, R	1995	9	919	FASEB J	HCAPLUS
Galzie, Z	1997	75	669	Biochem Cell Biol	HCAPLUS
Gambarini, A	1993	124	121	Mol Cell Biochem	HCAPLUS
Gimenez-Gallego, G	1986	135	541	Biochem Biophys Res	HCAPLUS
Hrikovini, M	1995	268	159	Carbohydr Res	
Ichikawa, I	1986	27	611	Tetrahedron Lett	
Ishihara, M	1993	268	4675	J Biol Chem	HCAPLUS

Jacquinet, J	1984	130	221	Carbohydr Res	HCAPLUS
Jeannerat, D	1999	141	133	J Magn Reson	HCAPLUS
Jeener, J	1979	71	4546	J Chem Phys	HCAPLUS
Juhasz, P	1995	270	131	Carbohydr Res	HCAPLUS
Kinzi, W	1985		1537	Liebigs Ann Chem	
Kovensky, J	1999	7	1567	Biorg Med Chem	HCAPLUS
Kovensky, J	1996	7	3119	Tetrahedron:Asymmetr	HCAPLUS
Kunz, H	1982		41	Liebigs Ann Chem	HCAPLUS
La Ferla, B	1999	55	9867	Tetrahedron	HCAPLUS
Lindahl, U	1989			Heparin	
Lozano, R	1997	248	30	Eur J Biochem	HCAPLUS
Lozano, R	1998	281	899	J Mol Biol	HCAPLUS
Lucas, H	1990	46	8207	Tetrahedron	HCAPLUS
Mach, H	1993	32	5480	Biochemistry	HCAPLUS
Marion, D	1983	113	286	Biochem Biophys Res	
Mason, I	1994	78	547	Cell	MEDLINE
McKeehan, W	1998	59	135	Prog Nucleic Acid Re	HCAPLUS
Mikhailov, D	1996	318	93	Biochem J	HCAPLUS
Mikhailov, D	1997	328	51	Biochem J	HCAPLUS
Mulloy, B	1993	298	849	Biochem J	
Ojeda, R	1999	8	1316	Synlett	
Ornitz, D	1992	12	240	Mol Cell Biol	MEDLINE
Ornitz, D	1995	268	432	Science	HCAPLUS
Ortega, S	1992	10	795	Bio/Technology	HCAPLUS
Pellegrini, L	2000	407	1029	Nature	HCAPLUS
Petitou, M	1991	1	95	Biorg Med Chem Lett	HCAPLUS
Petitou, M	1986	147	221	Carbohydr Res	HCAPLUS
Petitou, M	1988	179	163	Carbohydr Res	HCAPLUS
Pineda-Lucena, A	1994	242	81	J Mol Biol	HCAPLUS
Pineda-Lucena, A	1996	264	162	J Mol Biol	HCAPLUS
Plotnikov, A	1999	98	641	Cell	HCAPLUS
Romero, A	1996	241	453	Eur J Biochem	HCAPLUS
Schlessinger, J	2000	6	743	Mol Cell	HCAPLUS
Sinay, P	1984	132	C5	Carbohydr Res	HCAPLUS
Slavin, J	1995	19	431	Cell Biol Int	HCAPLUS
Spivak-Kroizman, T	1994	79	1015	Cell	HCAPLUS
Stauber, D	2000	97	49	Proc Natl Acad Sci U	HCAPLUS
Stringer, S	1997	29	709	Int J Biochem Cell B	HCAPLUS
Szebenyi, G	1999	185	45	Int Rev Cytol	HCAPLUS
Tabeaur, C	1999	7	2003	Bioorg Med Chem	HCAPLUS
Tailler, D	1992		3163	J Chem Soc Perkin Tr	HCAPLUS
Taipale, J	1997	11	51	FASEB J	HCAPLUS
Torri, G	1985	128	134	Biochem Biophys Res	HCAPLUS
Ullrich, A	1990	61	203	Cell	HCAPLUS
van Boeckel, C	1993	105	1741	Angew Chem	HCAPLUS
van Boeckel, C	1993	32	1671	Angew Chem Int Ed En	
van Boekel, C	1985	4	293	J Carbohydr Chem	
Vasella, A	1991	74	2073	Helv Chim Acta	HCAPLUS
Venkataraman, G	1999	96	3658	Proc Natl Acad Sci U	HCAPLUS
Walker, A	1994	269	931	J Biol Chem	HCAPLUS
Wang, H	1997	235	369	Biochem Biophys Res	HCAPLUS
Wasman, G	1998	5	527	Nat Struct Biol	
Willker, W	1993	31	287	J Magn Reson	HCAPLUS
Woods, R	1995	99	3832	J Phys Chem	HCAPLUS
Zazo, M	1992	113	231	Gene	HCAPLUS
Zhou, F	1997	73	71	Eur J Cell Biol	HCAPLUS

L29 ANSWER 2 OF 25 HCAPLUS COPYRIGHT 2002 ACS

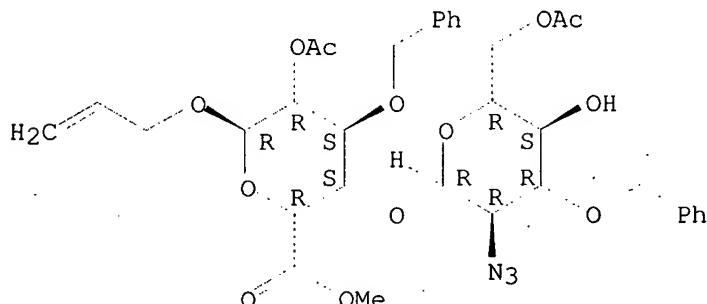
AN 2001:527055 HCAPLUS

DN 135:288993

TI A rational approach to heparin-related fragments - synthesis of  
differently sulfated tetrasaccharides as potential ligands for fibroblast  
growth factors

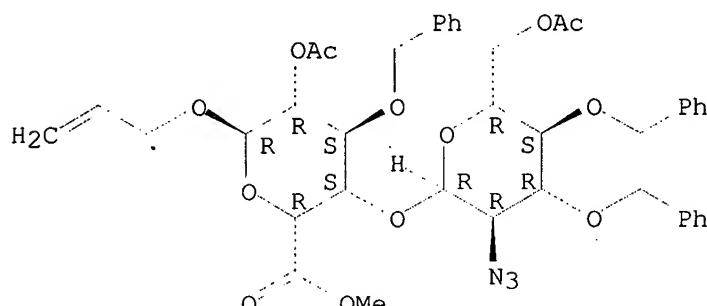
AU Poletti, Laura; Fleischer, Martin; Vogel, Christian; Guerrini, Marco;  
 Torri, Giangiacomo; Lay, Luigi  
 CS Department of Organic and Industrial Chemistry, University of Milan,  
 Milan, 20133, Italy  
 SO European Journal of Organic Chemistry (2001), (14), 2727-2734  
 CODEN: EJOCFK; ISSN: 1434-193X  
 PB Wiley-VCH Verlag GmbH  
 DT Journal  
 LA English  
 OS CASREACT 135:288993  
 AB Heparin-like tetrasaccharides 1-3, differing in their sulfation pattern at position 6 of the glucosamine units, were synthesized. The three compds. are putative ligands for fibroblast growth factors and have the unusual sequence (GlcN-IdoA). They were obtained from two common disaccharide precursors by a versatile synthetic procedure.  
 IT 364378-92-7P  
 RL: BPN (Biosynthetic preparation); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation)  
 (synthesis of heparin-related fragments sulfated tetrasaccharides as potential ligands for fibroblast growth factors)  
 RN 364378-92-7 HCAPLUS  
 CN .alpha.-L-Idopyranosiduronic acid, 2-propenyl 4-O-[6-O-acetyl-2-azido-2-deoxy-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-acetate (9CI) (CA INDEX NAME)

Absolute stereochemistry.



IT 245109-89-1  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (synthesis of heparin-related fragments sulfated tetrasaccharides as potential ligands for fibroblast growth factors)  
 RN 245109-89-1 HCAPLUS  
 CN .alpha.-L-Idopyranosiduronic acid, 2-propenyl 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-acetate (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (+).



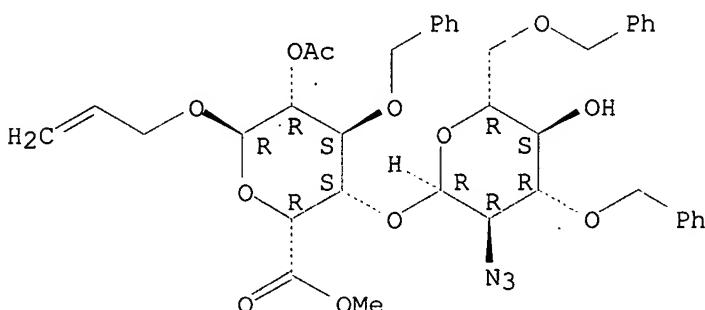
IT 364378-91-6P 364378-94-9P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (synthesis of heparin-related fragments sulfated tetrasaccharides as potential ligands for fibroblast growth factors)

RN 364378-91-6 HCAPLUS

CN .alpha.-L-Idopyranosiduronic acid, 2-propenyl 4-O-[2-azido-2-deoxy-3,6-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-acetate (9CI) (CA INDEX NAME)

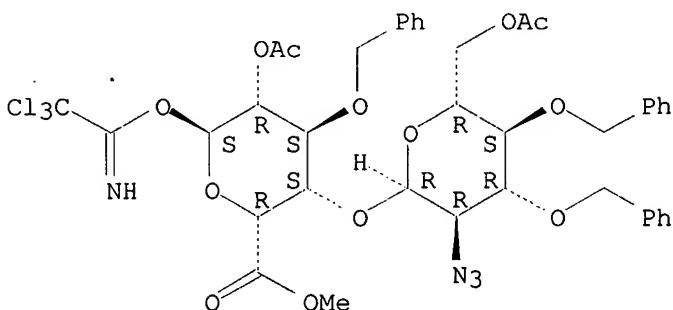
Absolute stereochemistry. Rotation (-).



RN 364378-94-9 HCAPLUS

CN .alpha.-L-Idopyranuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-acetate 1-(2,2,2-trichloroethanimidate) (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (+).



## RETABLE

Referenced Author (RAU)	Year (R PY)	VOL (R VL)	PG (R PG)	Referenced Work (RWK)	Referenced File (HCAPLUS)
Burgess, W	1989	58	1575	Ann Rev Biochem	HCAPLUS
Casu, B	1985	43	51	Adv Carbohydr Chem	HCAPLUS
Faham, S	1996	271	1116	Science	HCAPLUS
Guimond, S	1993	268	23906	J Biol Chem	HCAPLUS
Hileman, R	1998	20	156	BioEssays	MEDLINE
Jacquinet, J	1984	130	221	Carbohydr Res	HCAPLUS
Kjellen, L	1991	60	443	Ann Rev Biochem	HCAPLUS
Klagsburn, M	1990	2	857	Curr Opin Cell Biol	
La Ferla, B	1999	55	9867	Tetrahedron	HCAPLUS
Maccarana, M	1993	268	23898	J Biol Chem	HCAPLUS
Mach, H	1993	32	5480	Biochemistry	HCAPLUS
Nilsson, M	1993	246	161	Carbohydr Res	HCAPLUS
Oltvoort, J	1981		305	Synthesis	

Pellegrini, L	1986	1000	107	1029	Nature	1
Schmidt, R	1986	25	212	Angew Chem Int Ed En		

L29 ANSWER 3 OF 25 HCAPLUS COPYRIGHT 2002 ACS

AN 1999:737592 HCAPLUS

DN 132:122840

DN 152.122045  
TI Synthesis of heparin partial structures and their binding activities to platelets

AU Koshida, Shuhei; Suda, Yasuo; Sobel, Michael; Ormsby, Julie; Kusumoto, Shoichi

CS Department of Chemistry, Graduate School of Science, Osaka University,  
Osaka, 560-0043, Japan

SO Bioorganic & Medicinal Chemistry Letters (1999), 9(21), 3127-3132

CODEN: BMCL8; ISSN: 0960-894X

CODEN: BM

## DT Journal

## LA English

AB A synth

region in heparin was also found to bind to human platelets. To identify the platelet-binding site in the pentasaccharide which is expected to be a novel sequence in heparin responsible for its platelet-binding, five partial structures of this particular pentasaccharide were synthesized. In a competitive assay using [<sup>3</sup>H]-heparin, a trisaccharide, O-(2-deoxy-2-sulfamido-3,6-di-O-sulfo-.alpha.-D-glucopyranosyl)-(1.fwdarw.4)-O-(2-O-sulfo-.alpha.-L-idopyranosyluronic acid)-(1.fwdarw.4)-2-deoxy-2-sulfamido-6-O-sulfo-.alpha.-D-glucopyranose, was concluded to be a high-affinity site for heparin's binding to platelets.

IT 256348-66-0P 256348-68-2P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

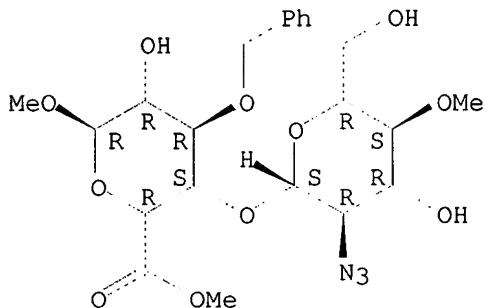
(synthesis of heparin partial structures and their binding activities to human platelets)

RN 256348-66-0 HCAPLUS

CN .alpha.-L-Idopyranosiduronic acid, methyl 4-O-(2-azido-2-deoxy-4-O-methyl-.beta.-D-glucopyranosyl)-3-O-(phenylmethyl)-, methyl ester (9CI) (CA

INDEX NAME)

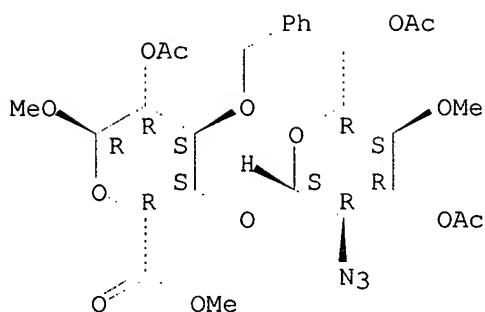
## Absolute stereochemistry.



RN 256348-68-2 HCAPLUS

CN .alpha.-L-Idopyranosiduronic acid, methyl 4-O-(3,6-di-O-acetyl-2-azido-2-deoxy-4-O-methyl-.beta.-D-glucopyranosyl)-3-O-(phenylmethyl)-, methyl ester, 2-acetate (9CI) (CA INDEX NAME)

## Absolute stereochemistry.



## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anelli, P	1987	52	2559	J Org Chem	
Anon	1989			Heparin	
Davis, N	1993	34	1181	Tetrahedron Lett	HCAPLUS
Hashimoto, N	1981	29	1475	Chem Pharm Bull	HCAPLUS
Isobe, M	1986	27	963	Tetrahedron Lett	HCAPLUS
Koshida, S	1999	40	5725	Tetrahedron Lett	HCAPLUS
Koshida, S	1998			XXth Japanese Carboh	
Kovensky, J	1996	7	3119	Tetrahedron: Asymmet	HCAPLUS
Petitou, M	1986	147	221	Carbohydr Res	HCAPLUS
Sobel, M	1992	5	1	Perspec Vasc Surg	
Suda, Y	1996	37	1053	Tetrahedron Lett	HCAPLUS
Suda, Y	1993	69	501	Throm Res	HCAPLUS
van Boeckel, C	1985	4	293	J Carbohydr Chem	HCAPLUS
Yamada, S	1998	10	95	Trends in Glycoscien	HCAPLUS

L29 ANSWER 4 OF 25 HCAPLUS COPYRIGHT 2002 ACS

AN 1999:571345 HCAPLUS

DN 131:299635

TI A synthetic heparan sulfate pentasaccharide, exclusively containing L-iduronic acid, displays higher affinity for FGF-2 than its D-glucuronic acid-containing isomers

AU Kovensky, Jose; Duchaussay, Philippe; Bono, Francoise; Salmivirta, Markku; Sizun, Philippe; Herbert, Jean-Marc; Petitou, Maurice; Sinay, Pierre

CS Ecole Normale Superieure, Departement de Chimie, Associe au CNRS, Paris, 75231, Fr.

SO Bioorganic &amp; Medicinal Chemistry (1999), 7(8), 1567-1580

CODEN: BMECEP; ISSN: 0968-0896

PB Elsevier Science Ltd.

DT Journal

LA English

AB It has been suggested that the FGF-2 binding site on heparan sulfate chains is a trisulfated pentasaccharide contg. three hexuronic acid units. The configuration at C-5 of two of them being undetd., we have synthesized the four possible pentasaccharides, and have evaluated their FGF-2 binding affinity through in vitro biol. assays. The pentasaccharide contg. L-iduronic acid as the sole hexuronic acid showed higher affinity for FGF-2 than the other pentasaccharides, where one hexuronic acid unit at least is D-glucuronic acid.

IT 181024-60-2

RL: RCT (Reactant); RACT (Reactant or reagent)

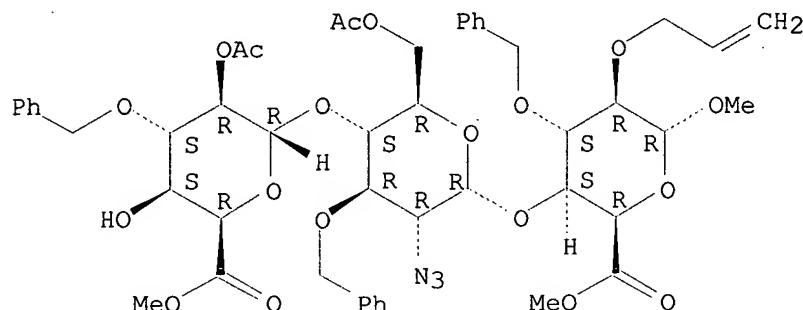
(prepn. of heparan sulfate pentasaccharides contg. L-iduronic acid which display higher affinity for FGF-2 than D-glucuronic acid-contg. isomers)

RN 181024-60-2 HCAPLUS

CN .alpha.-L-Idopyranosiduronic acid, methyl O-2-O-acetyl-6-methyl-3-O-

(phenylmethyl)-.alpha.-L-idopyranuronosyl-(1.fwdarw.4)-O-6-O-acetyl-2-azido-2-deoxy-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-3-O-(phenylmethyl)-2-O-2-propenyl-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (-).



RETABLE

Referenced Author (RAU)	Year (R PY)	VOL (R VL)	PG (R PG)	Referenced Work (RWK)	Referenced File
Bono, F	1997	326	661	Biochem J	HCAPLUS
Casu, B	1988	13	221	Trends Biochem Sci	HCAPLUS
Faham, S	1996	271	1116	Science	HCAPLUS
Ferro, D.	1990	195	157	Carbohydr Res	HCAPLUS
Ferro, D	1986	108	6773	J Am Chem Soc	HCAPLUS
Fischer, B	1984	49	4988	J Org Chem	HCAPLUS
Gallagher, J	1994	32	239	Eur J Clin Chem Clin	HCAPLUS
Guimond, S	1993	268	23906	J Biol Chem	HCAPLUS
Helferich, B	1953	86	604	Chem Ber	HCAPLUS
Herr, A	1997	272	16382	J Biol Chem	HCAPLUS
Jonsson, U	1991	11	620	Biotechniques	MEDLINE
Kessler, H	1986	70	106	J Magn Res	HCAPLUS
Koenders, H	1981	21	381	Tetrahedron Lett	
Konradsson, P	1990	31	4313	Tetrahedron Lett	HCAPLUS
Kovensky, J	1996	7	3119	Tetrahedron:Asymmetr	HCAPLUS
Maccarana, M	1993	268	23898	J Biol Chem	HCAPLUS
Mach, H	1993	32	5480	Biochemistry	HCAPLUS
Moy, F	1997	63	4782	Biochemistry	
Oltvoort, J	1981	305		Synthesis	
Ornitz, D	1995	268	432	Science	HCAPLUS
Pavel, K				NMR-Sim version 2.6.	
Pedretti, V	1993	244	247	Carbohydr Res	HCAPLUS
Petitou, M	1986	147	221	Carbohydr Res	HCAPLUS
Sakai, K	1990	31	3035	Tetrahedron Lett	HCAPLUS
Schmidt, R	1984	1342		Liebigs Ann Chem	
Schmidt, R	1984	25	821	Tetrahedron Lett	HCAPLUS
Tabeuri, C	1996	281	253	Carbohydr Res	HCAPLUS
Turnbull, J	1992	267	10337	J Biol Chem	HCAPLUS
Veeneman, G	1990	31	1331	Tetrahedron Lett	HCAPLUS
Walker, A	1994	269	931	J Biol Chem	HCAPLUS
Yayon, A	1991	64	1841	Cell	HCAPLUS

L29 ANSWER 5 OF 25 HCAPLUS COPYRIGHT 2002 ACS

AN 1999:512080 HCAPLUS

DN 131:257764

TI Synthesis of disaccharidic sub-units of a new series of heparin related oligosaccharides

AU La Ferla, Barbara; Lay, Luigi; Guerrini, Marco; Poletti, Laura; Panza, Luigi; Russo, Giovanni

CS Universita degli Studi di Milano, Dipartimento di Chimica Organica e

Industriale, Centro di Studio sulle Sostanze Organiche Naturali del CNR,  
Milan, 21-20133, Italy

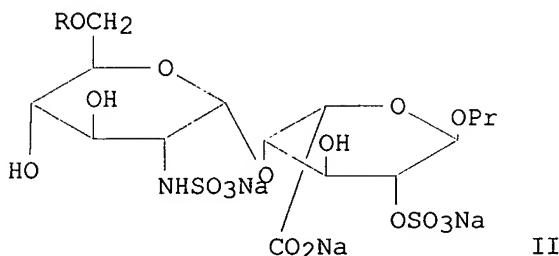
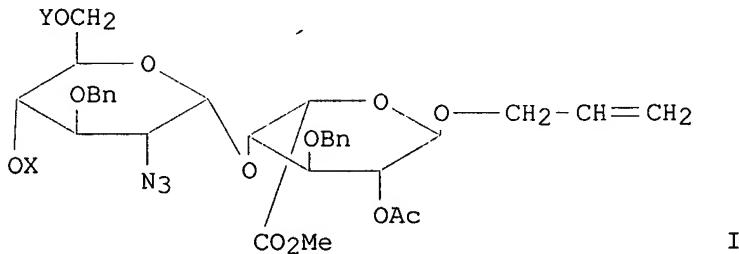
SO Tetrahedron (1999), 55(32), 9867-9880 ←  
CODEN: TETRAB; ISSN: 0040-4020

PB Elsevier Science Ltd.

DT Journal

LA English

GI



AB The chem. synthesis of disaccharides I (X = Bn, Y = Ac; X, Y = CHPh), useful building-blocks for the prepn. of a new series of heparin related oligosaccharides contg. the unusual sequence (GlcN-IdoA)<sub>n</sub>, is described. In addn., the orthogonality of the protective groups would allow access to a wide array of differently sulfated oligosaccharides. As the simplest members of this new class of oligomer, the synthesis of sulfated disaccharides II (R = SO<sub>3</sub>Na, H) fully deprotected is reported.

IT 245109-89-1P 245110-04-7P 245110-06-9P

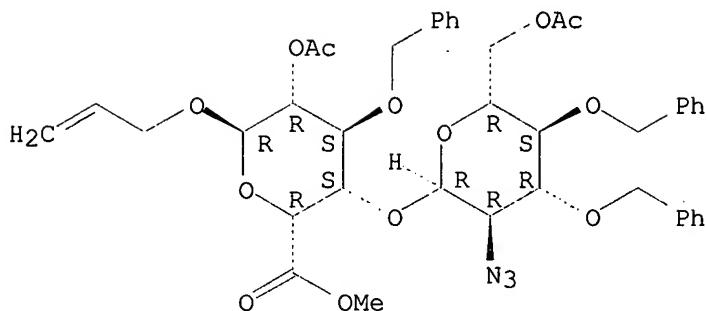
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(synthesis of disaccharidic sub-units of a new series of heparin related oligosaccharides)

RN 245109-89-1 HCAPLUS

CN .alpha.-L-Idopyranosiduronic acid, 2-propenyl 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-acetate (9CI) (CA INDEX NAME)

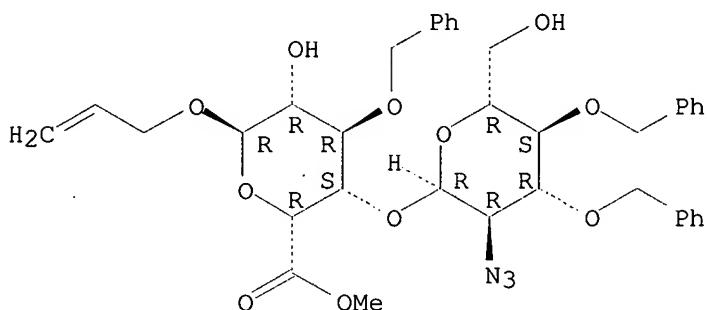
Absolute stereochemistry. Rotation (+).



RN 245110-04-7 HCAPLUS

CN .alpha.-L-Idopyranosiduronic acid, 2-propenyl 4-O-[2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

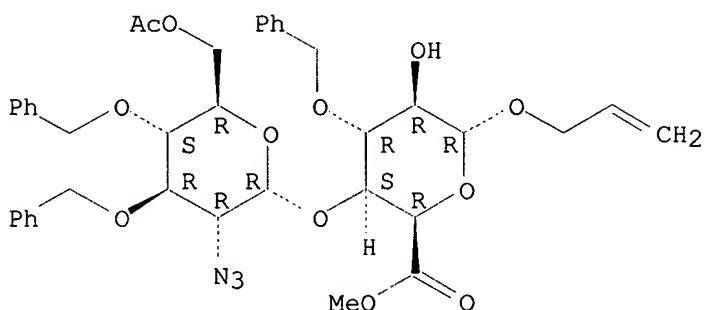
Absolute stereochemistry.



RN 245110-06-9 HCAPLUS

CN .alpha.-L-Idopyranosiduronic acid, 2-propenyl 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (+).



## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Alper, P	1996   37	6029	Tetrahedron Lett	HCAPLUS	
Burgess, W	1989   58	575	Annu Rev Biochem	HCAPLUS	
Casu, B	1985   43	51	Adv Carbohydr Chem	HCAPLUS	
Caveander, C	1972   37	3567	J Org Chem		
Eisele, T	1995	2113	Liebigs Ann Chem	HCAPLUS	

Guimond, S	1993	268	23906	J Biol Chem	HCAPLUS
Kjellen, L	1991	60	443	Annu Rev Biochem	HCAPLUS
Klagsbrun, M	1990	2	857	Curr Opin Cell Biol	HCAPLUS
Lindahl, U	1984	259	12368	J Biol Chem	HCAPLUS
Maccarana, M	1993	268	23898	J Biol Chem	HCAPLUS
van Boeckel, C	1985	4	293	J Carbohydr Chem	HCAPLUS
Yang, G	1997	38	6725	Tetrahedron Lett	HCAPLUS

L29 ANSWER 6 OF 25 HCAPLUS COPYRIGHT 2002 ACS

AN 1999:476747 HCAPLUS

DN 131:199923

TI Synthesis and biological activity of oligomer-model compounds containing units of a key platelet-binding disaccharide of heparin

AU Koshida, Shuhei; Suda, Yasuo; Fukui, Yasuhiro; Ormsby, Julie; Sobel, Michael; Kusumoto, Shoichi

CS Department of Chemistry, Graduate School of Science, Osaka University, Osaka, 560-0043, Japan

SO Tetrahedron Letters (1999), 40(31), 5725-5728 ←  
CODEN: TELEAY; ISSN: 0040-4039

PB Elsevier Science Ltd.

DT Journal

LA English

AB A key disaccharide unit in heparin, O-(2-deoxy-2-sulfamido-6-O-sulfo-.alpha.-D-glucopyranosyl)-(1.fwdarw.4 )-2-O-sulfo-.alpha.-L-idopyranosyluronic acid, was previously found to be responsible for the binding interaction of heparin to platelets. A clustering effect to enhance the binding was found to be dependent on the no. and frequency of the disaccharide units in a heparin mol. To systematically examine the clustering effect, three oligomer-model compds. contg. two or three units of the disaccharide were synthesized. These compds. inhibited 3H-labeled heparin binding to human platelets more strongly than a compd. contg. only one unit of the disaccharide.

IT 241129-74-8P 241129-76-0P 241129-80-6P

241129-85-1P 241129-86-2P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(prepn. and biol. activity of oligomer-model compds. contg. units of a key platelet-binding disaccharide of heparin)

RN 241129-74-8 HCAPLUS

CN .alpha.-L-Idopyranosiduronic acid, methyl 4-O-[6-O-acetyl-2-azido-2-deoxy-3-O-(phenylmethyl)-4-O-2-propenyl-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-acetate (9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 241129-76-0 HCAPLUS

CN .alpha.-L-Idopyranosiduronic acid, 4', 4'''-O-[1,2-ethanediylbis[imino(2-oxo-2,1-ethanediyl)]]bis[methyl 4-O-[6-O-acetyl-2-azido-2-deoxy-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, dimethyl ester, 2,2''-diacetate (9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 241129-80-6 HCAPLUS

CN .alpha.-L-Idopyranosiduronic acid, 2-aminoethyl 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-methyl-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-acetate (9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 241129-85-1 HCAPLUS

CN .alpha.-L-Idopyranosiduronic acid, methyl 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-(2-oxoethyl)-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-acetate (9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 241129-86-2 HCAPLUS  
 CN ..alpha.-L-Idopyranosiduronic acid, 2-[[ (9H-fluoren-9-ylmethoxy)carbonyl]amino]ethyl 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-methyl-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-acetate (9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RETABLE

Referenced (RAU)	Author	Year (R PY)	VOL (R VL)	PG (R PG)	Referenced Work (RWK)	Referenced File
Carlson, L		1965	30	3953	J Org Chem	HCAPLUS
Chen, S		1991	32	6711	Tetrahedron Lett	HCAPLUS
Davis, N		1993	34	1181	Tetrahedron Lett	HCAPLUS
Kovensky, J		1996	7	3119	Tetrahedron: Asymmet	HCAPLUS
Suda, Y		1996	37	151	Polymer Preprints	HCAPLUS
Suda, Y		1996	37	1053	Tetrahedron Lett	HCAPLUS
Suda, Y		1993	69	501	Throm Res	HCAPLUS
van Boeckel, C		1985	4	293	J Carbohydr Chem	HCAPLUS

L29 ANSWER 7 OF 25 HCAPLUS COPYRIGHT 2002 ACS

AN 1998:617886 HCAPLUS

DN 129:316478

TI Synthesis of a 3-deoxy-L-iduronic acid containing heparin pentasaccharide to probe the conformation of antithrombin III binding sequence

AU Lei, Ping-Sheng; Duchaussay, Philippe; Sizun, Philippe; Mallet, Jean-Maurice; Petitou, Maurice; Sinay, Pierre

CS Ecole Normale Supérieure, Département de Chimie, URA CNRS 1686, 24 Rue Lhomond, Paris, 75231, Fr.

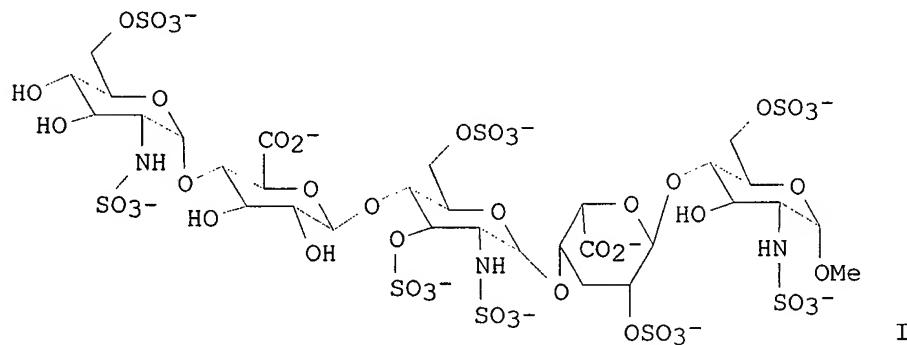
SO Bioorganic & Medicinal Chemistry (1998), 6(8), 1337-1346 *1 L L*  
 CODEN: BMECEP; ISSN: 0968-0896

PB Elsevier Science Ltd.

DT Journal

LA English

GI



AB We report in this work the total synthesis of a close analog I of the pentasaccharide active site of heparin, in which the L-iduronic acid residue has been deoxygenated at position three. <sup>1</sup>H NMR studies demonstrated that, as anticipated, such a modification induces a shift of the conformational equil. toward 1C4 (contribution to the conformational equil. rises from 37% to 65%) and a substantial decrease of the affinity for antithrombin III (Kd 0.154 .mu.M vs. 0.050 .mu.M).

IT 214767-67-6

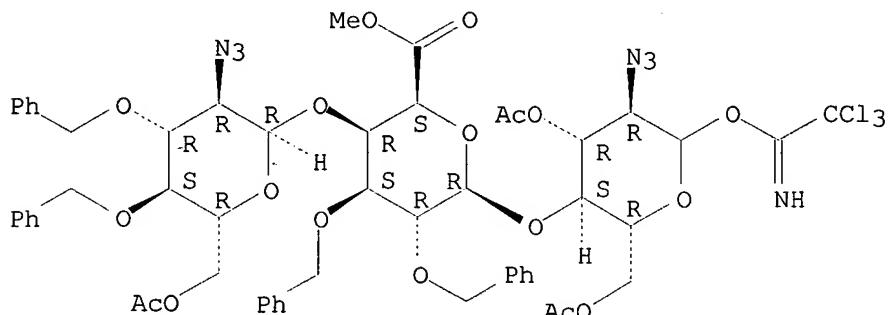
RL: RCT (Reactant); RACT (Reactant or reagent)  
 (synthesis of 3-deoxy-L-iduronic acid contg. heparin pentasaccharide to

probe the conformation of antithrombin III binding sequence)

RN 214767-67-6 HCAPLUS

CN D-Glucopyranose, O-6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-O-6-methyl-2,3-bis-O-(phenylmethyl)-.beta.-D-galactopyranuronosyl-(1.fwdarw.4)-2-azido-2-deoxy-, 3,6-diacetate 1-(2,2,2-trichloroethanimidate) (9CI) (CA INDEX NAME)

Absolute stereochemistry.



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Angyal, S	1972	25	1695	Austr J Chem	HCAPLUS
Angyal, S	1972		1711	Austr J Chem	HCAPLUS
Atha, D	1987	26	6454	Biochemistry	HCAPLUS
Binkley, R	1978	43	3244	J Org Chem	HCAPLUS
Bodenhausen, G	1984	58	370	J Magn Reson	HCAPLUS
Carlsen, H	1981	46	3936	J Org Chem	
Casu, B	1985	13	51	Adv Carbo Chem Bioch	
Casu, B	1986	322	215	Nature (London)	HCAPLUS
Cerny, M	1955	49	1848	Chem Listy	HCAPLUS
Choay, J	1981	370	644	Ann N Y Acad Sci	HCAPLUS
Choay, J	1983	116	492	Biochem Biophys Res	HCAPLUS
Ferro, D	1990	195	157	Carbo Res	HCAPLUS
Ferro, D	1986	108	6773	J Am Chem Soc	HCAPLUS
Gallagher, T	1893	116	227	Carbo Res	
Garegg, P	1980		2866	J Chem Soc Perkin I	HCAPLUS
Gillard, F	1988		2291	J Chem Soc Perkin I	HCAPLUS
Greene, T	1991		60	Protective Groups in	
Hedgley, E	1963		4701	J Chem Soc	HCAPLUS
Jacquinet, J	1984	130	221	Carbo Res	HCAPLUS
Kovac, P	1985	4	243	J Carbo Chem	HCAPLUS
Kunz, H	1979	20	2123	Tetrahedron Lett	
Lei, P	1994		378	Abstr XVIIth Int Car	
Marion, D	1983	113	967	Biochem Biophys Res	HCAPLUS
Olson, S	1992	267	12528	J Biol Chem	HCAPLUS
Petitou, M	1991	1	95	Bioorg Med Chem Lett	HCAPLUS
Petitou, M	1986	147	221	Carbo Res	HCAPLUS
Petitou, M	1987	167	67	Carbo Res	HCAPLUS
Petitou, M	1988	179	163	Carbo Res	HCAPLUS
Petrakova, E	1996	284	191	Carbo Res	HCAPLUS
Ragazzi, M	1990	195	169	Carbo Res	HCAPLUS
Rosenberg, R	1973	248	6490	J Biol Chem	HCAPLUS
Sakairi, N	1996	2	1007	Chem Eur J	
Sakairi, N	1982	23	5327	Tetrahedron Lett	HCAPLUS
Sato, K	1988		1703	Chem Lett	HCAPLUS
Schuda, P	1983	24	3829	Tetrahedron Lett	HCAPLUS
Sinay, P	1984	132	C5	Carbo Res	HCAPLUS
Thunberg, L	1982	100	393	Carbo Res	HCAPLUS

Torri, G	1985   128	134	Biochem Biophys Res	HCAPLUS
van Boeckel, C	1993   32	1671	Angew Chem Int Ed En	
van Boeckel, C	1985   4	293	J Carbo Chem	HCAPLUS
van Boeckel, C	1988   29	803	Tetrahedron Lett	HCAPLUS

L29 ANSWER 8 OF 25 HCPLUS COPYRIGHT 2002 ACS

AN 1996:734594 HCAPLUS

DN 126:89678

TI Binding of heparan sulfate to fibroblast growth factor-2. Total preparation of a putative pentasaccharide binding site

AU Kovensky, Jose; Duchaussoy, Philippe; Petitou, Maurice; Sinay, Pierre  
CS Dep. Chim., Ecole Normale Super., Paris, 75231, Fr.

SO Tetrahedron: Asymmetry (1996), 7(11), 3119-3128

CODEN: TASYE3; ISSN: 0957-4166

PB Elsevier

DT Journal

LA English

BA English  
AB The tot

AB The total chem. prepn. of the pentasaccharide Me O-(.alpha.-L-idopyranosyluronic acid)-(1.fwdarw.4)-O-(2-deoxy-2-sulfamido-.alpha.-D-glucopyranosyl)-(1.fwdarw.4)-O-(.alpha.-L-idopyranosyluronic acid)-(1.fwdarw.4)-O-(2-deoxy-2-sulfamido-.alpha.-D-glycopyranosyl)-(1.fwdarw.4)-2-O-sulfo-.alpha.-L-idopyranosiduronic acid is reported. This sequence is a possible candidate for binding to basic fibroblast growth factor (FGF-2).

IT 181024-59-9P 181024-60-2P

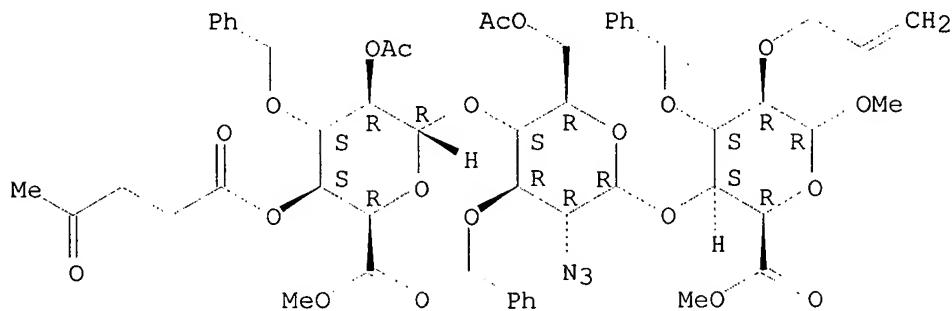
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(total prepn. of uronate-contg. pentasaccharide as binding site for fibroblast growth factor-2)

RN 181024-59-9 HCAPLUS

CN .alpha.-L-Idopyranosiduronic acid, methyl 0-2-O-acetyl-4-O-(1,4-dioxopentyl)-6-methyl-3-O-(phenylmethyl)-.alpha.-L-idopyranuronosyl-(1.fwdarw.4)-O-6-O-acetyl-2-azido-2-deoxy-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-3-O-(phenylmethyl)-2-O-2-propenyl-, methyl ester (9CI) (CA INDEX NAME)

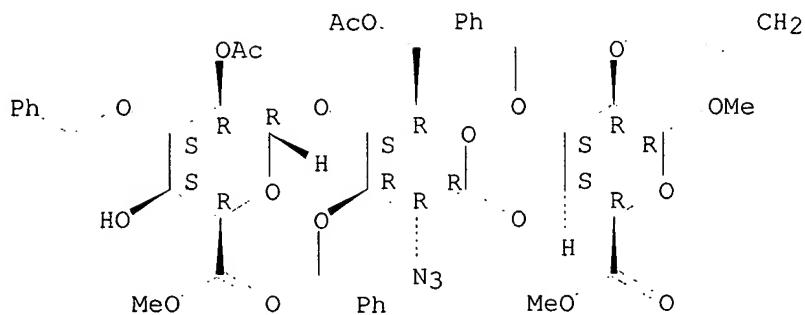
### Absolute stereochemistry. Rotation (-).



RN 181024-60-2 HCAPLUS

CN .alpha.-L-Idopyranosiduronic acid, methyl O-2-O-acetyl-6-methyl-3-O-(phenylmethyl)-.alpha.-L-idopyranuronosyl-(1.fwdarw.4)-O-6-O-acetyl-2-azido-2-deoxy-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-3-O-(phenylmethyl)-2-O-2-propenyl-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (-).



L29 ANSWER 9 OF 25 HCPLUS COPYRIGHT 2002 ACS

AN 1996:412705 HCPLUS

DN 125:222302

TI Total synthesis of a pentasaccharide sequence in heparin/heparan sulfate required for binding of basic fibroblast growth factor

AU Kovensky, Jose; Duchaussay, Philippe; Petitou, Maurice; Sinay, Pierre

CS Dep. Chimie, Ecole Normale Supérieure, Paris, 75231, Fr.

SO Carbohydrate Letters (1996), 2(1), 73-78 | L.L.  
CODEN: CLETEC; ISSN: 1073-5070

PB Harwood

DT Journal

LA English

AB This letter reports the total chem. synthesis of the hexasodium salt of the pentasaccharide Me O-(.alpha.-L-idopyranosyluronic acid)-(1.fwdarw.4)-O-(2-deoxy-2-sulfamido-.alpha.-D-glucopyranosyl)-(1.fwdarw.4)-O-(.alpha.-L-idopyranosyluronic acid)-(1.fwdarw.4)-O-(2-deoxy-2-sulfamido-.alpha.-D-glucopyranosyl)-(1.fwdarw.4)-2-O-sulfo-.alpha.-L-idopyranosid uronic acid, a proposed candidate for binding of basic fibroblast growth factor (FGF-2).

IT 181024-59-9P 181024-60-2P

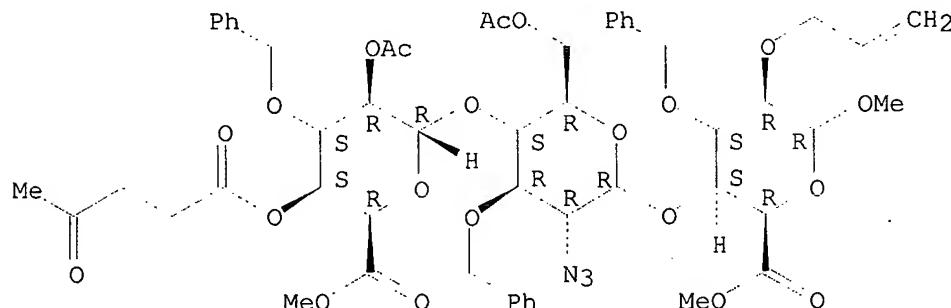
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(total synthesis of a pentasaccharide sequence in heparin/heparan sulfate required for binding of basic fibroblast growth factor)

RN 181024-59-9 HCPLUS

CN .alpha.-L-Idopyranosiduronic acid, methyl O-2-O-acetyl-4-O-(1,4-dioxopentyl)-6-methyl-3-O-(phenylmethyl)-.alpha.-L-idopyranuronosyl-(1.fwdarw.4)-O-6-O-acetyl-2-azido-2-deoxy-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-3-O-(phenylmethyl)-2-O-2-propenyl-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (-).

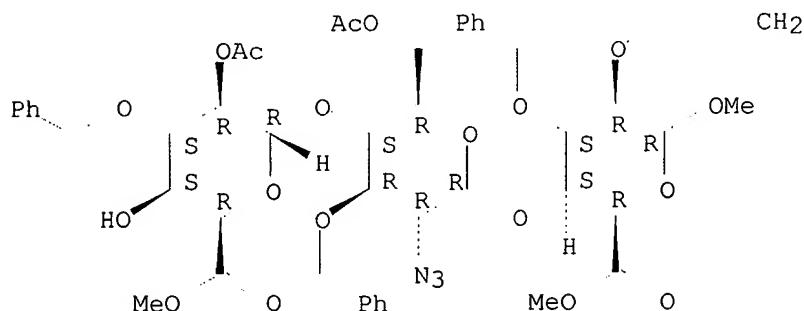


RN 181024-60-2 HCPLUS

CN .alpha.-L-Idopyranosiduronic acid, methyl O-2-O-acetyl-6-methyl-3-O-

(phenylmethyl)-.alpha.-L-idopyranuronosyl-(1.fwdarw.4)-O-6-O-acetyl-2-azido-2-deoxy-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-3-O-(phenylmethyl)-2-O-2-propenyl-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (-).



L29 ANSWER 10 OF 25 HCPLUS COPYRIGHT 2002 ACS

AN 1995:349989 HCPLUS

DN 122:265852

TI Synthesis and fibroblast growth factor binding of oligosaccharides related to heparin and heparin sulfate

AU Westman, Jacob; Nilsson, Marianne; Ornitz, David M.; Svahn, Carl-Magnus

CS Organic Chemistry, Kabi Pharmacia AB, Stockholm, S-112 87, Swed.

SO Journal of Carbohydrate Chemistry (1995), 14(1), 95-113

CODEN: JCACDM; ISSN: 0732-8303

PB Dekker

DT Journal

LA English

AB A series of six disaccharides, .alpha.-L-idoA-(1.fwdarw.4)-.alpha.-D-GlcNAc-1.fwdarw.OMe, .alpha.-L-IodoA-(1.fwdarw.4)-.alpha.-D-GlcNSO3-1.fwdarw.OMe, .beta.-D-GlcA-(1.fwdarw.4)-.alpha.-D-GlcNAc-1.fwdarw.OMe, .beta.-D-GlcA-(1.fwdarw.4)-.alpha.-D-GlcNSO3-1.fwdarw.OMe, .alpha.-D-GlcNAc-(1.fwdarw.4)-.beta.-D-GlcA-1.fwdarw.OMe, .beta.-D-GlcNAc-(1.fwdarw.4)-.beta.-D-GlcA-1.fwdarw.OMe, and two trisaccharide, .beta.-D-GlcA-(1.fwdarw.4)-.alpha.-D-GlcNAc-(1.fwdarw.4)-.beta.-D-GlcA-1.fwdarw.OMe, .alpha.-L-IodoA-(1.fwdarw.4)-.alpha.-D-GlcNSO3-(1.fwdarw.4)-.beta.-D-GlcA-1.fwdarw.OMe was prep'd. and screened for biol. activity in vitro. The oligosaccharides were tested, together with a previously synthesized trisaccharide, .alpha.-L-IodoA-(1.fwdarw.4)-.alpha.-D-GlcNAc-(1.fwdarw.4)-.beta.-D-GlcA-1.fwdarw.OMe, and three tetrasaccharides, .alpha.-L-IodoA-(1.fwdarw.4)-.alpha.-D-GlcNAc-(1.fwdarw.4)-.beta.-D-GlcA-(1.fwdarw.3)-.beta.-D-Gal-1.fwdarw.OMe, .beta.-D-GlcA-(1.fwdarw.3)-.beta.-D-Gal-(1.fwdarw.3)-.beta.-D-Gal-(1.fwdarw.3)-2-PO3-.beta.-D-Xyl-1.fwdarw.OMe, .beta.-D-GlcA-(1.fwdarw.3)-.beta.-D-Gal-(1.fwdarw.3)-.beta.-D-Xyl-1.fwdarw.OMe, for competitive binding to acidic and basic fibroblast growth factor in an assay using 125I labeled heparin. It was found that the non-sulfated trisaccharides, .alpha.-L-IodoA-(1.fwdarw.4)-.alpha.-D-GlcNAc-(1.fwdarw.4)-.beta.-D-GlcA-1.fwdarw.OMe and .beta.-D-GlcA-(1.fwdarw.4)-.alpha.-D-GlcNAc-(1.fwdarw.4)-.beta.-D-GlcA-1.fwdarw.OMe, and two of the disaccharides can bind to acidic as well as basic FGF.

IT 151992-81-3

RL: RCT (Reactant); RACT (Reactant or reagent)

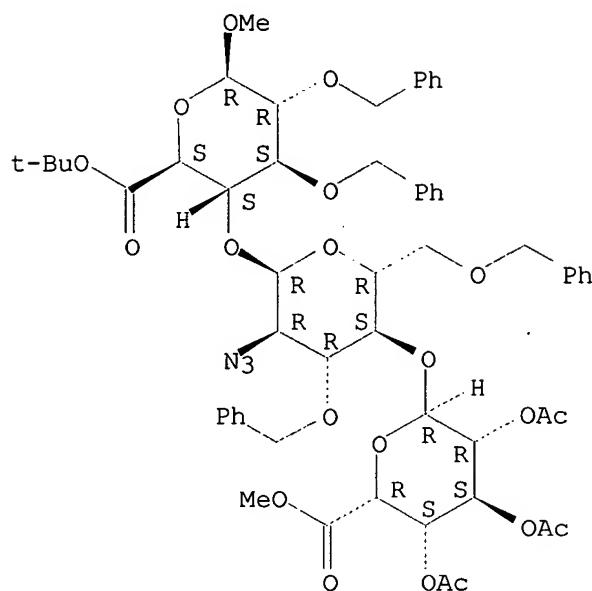
(synthesis and fibroblast growth factor binding of oligosaccharides related to heparin and heparin sulfate)

RN 151992-81-3 HCPLUS

CN .beta.-D-Glucopyranosiduronic acid, methyl O-2,3,4-tri-O-acetyl-6-methyl-.alpha.-L-idopyranuronosyl-(1.fwdarw.4)-O-2-azido-2-deoxy-3,6-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-2,3-bis-O-

(phenylmethyl)-, 1,1-dimethylethyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



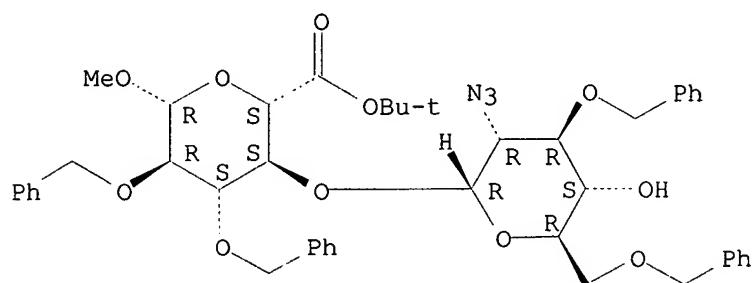
IT 162552-85-4P 162552-86-5P 162552-89-8P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(synthesis and fibroblast growth factor binding of oligosaccharides related to heparin and heparin sulfate)

RN 162552-85-4 HCAPLUS

CN .beta.-D-Glucopyranosiduronic acid, methyl 4-O-[2-azido-2-deoxy-3,6-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, 1,1-dimethylethyl ester (9CI) (CA INDEX NAME)

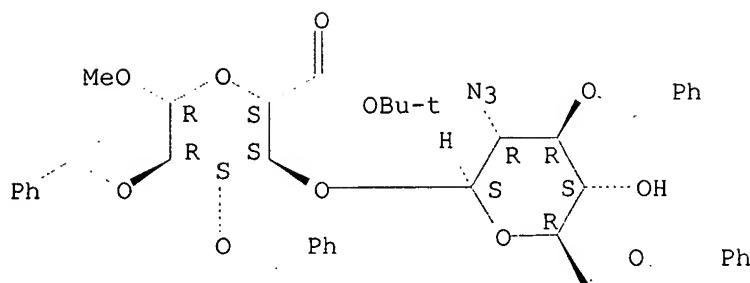
Absolute stereochemistry. Rotation (+).



RN 162552-86-5 HCAPLUS

CN .beta.-D-Glucopyranosiduronic acid, methyl 4-O-[2-azido-2-deoxy-3,6-bis-O-(phenylmethyl)-.beta.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, 1,1-dimethylethyl ester (9CI) (CA INDEX NAME)

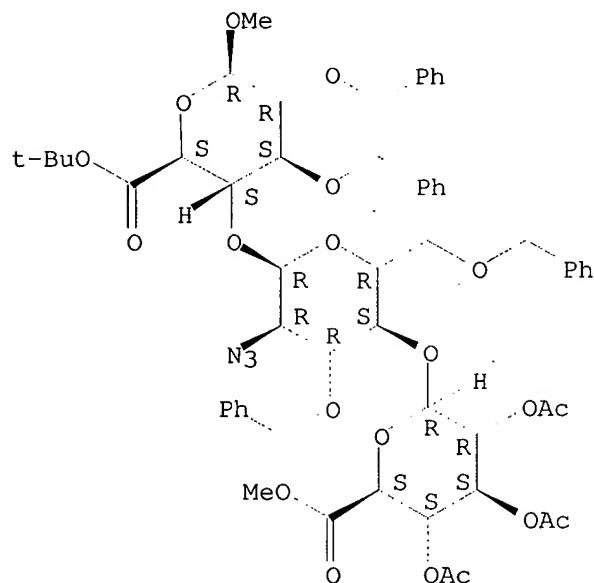
Absolute stereochemistry. Rotation (-).



RN 162552-89-8 HCAPLUS

CN .beta.-D-Glucopyranosiduronic acid, methyl 2,3,4-tri-O-acetyl-6-methyl-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-O-2-azido-2-deoxy-3,6-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-2,3-bis-O-(phenylmethyl)-, 1,1-dimethylethyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (+).



L29 ANSWER 11 OF 25 HCAPLUS COPYRIGHT 2002 ACS

AN 1994:54861 HCAPLUS

DN 120:54861

TI Synthesis of the methyl glycosides of a tri- and a tetra-saccharide related to heparin and heparan sulfate

AU Nilsson, Marianne; Svahn, Carl Magnus; Westman, Jacob

CS Kabi Pharm., Stockholm, S-112 87, Swed.

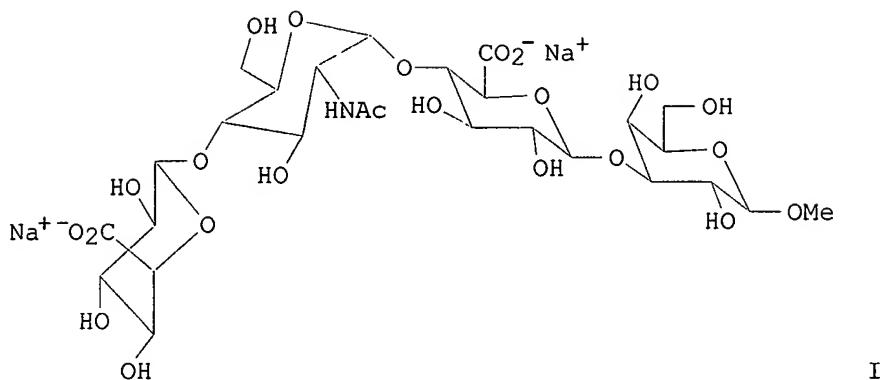
SO Carbohydrate Research (1993), 246, 161-72

CODEN: CRBRAT; ISSN: 0008-6215

DT Journal

LA English

GI



AB The Me glycoside of a tetrasaccharide isolated from heparin, Me O-(.alpha.-L-idopyranosyluronic acid)-(1.fwdarw.4)-O-(2-acetamido-2-deoxy-.alpha.-D-glucopyranosyl)-(1.fwdarw.4)-O-(.beta.-D-glucopyranosyluronic acid)-(1.fwdarw.3)-O-.beta.-D-galactopyranoside disodium salt and a trisaccharide deriv. thereof, Me O-(.alpha.-L-idopyranosyluronic acid)-(1.fwdarw.4)-O-(2-acetamido-2-deoxy-.alpha.-D-glucopyranosyl)-(1.fwdarw.4)-O-.beta.-D-glucopyranosyluronic acid disodium salt, were synthesized using a block-type strategy. A suitable protected disaccharide block of iduronic acid and glucosamine (IdoA-GlcN) was used as a key intermediate for the syntheses and was glycosylated with a protected galactose deriv. and a disaccharide block of glucuronic acid and galactose (GlcA-Gal) to give tri- and tetra-saccharide derivs., resp. Deprotection gave the target compds., e.g. I.

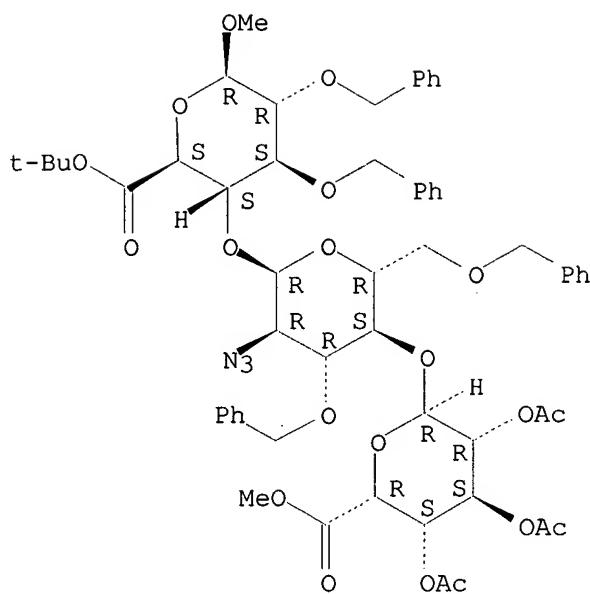
IT 151992-81-3

RL: RCT (Reactant); RACT (Reactant or reagent)  
(prepn. as intermediate in prepn. of oligosaccharide related to heparin and heparan sulfate)

RN 151992-81-3 HCPLUS

CN .beta.-D-Glucopyranosiduronic acid, methyl 0-2,3,4-tri-O-acetyl-6-methyl-.alpha.-L-idopyranuronosyl-(1.fwdarw.4)-O-2-azido-2-deoxy-3,6-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-2,3-bis-O-(phenylmethyl)-, 1,1-dimethylethyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L29 ANSWER 12 OF 25 HCAPLUS COPYRIGHT 2002 ACS

AN 1993:581119 HCAPLUS

DN 119:181119

TI Biologically active heparin-like fragments with a "non-glycosaminio" glycan structure. Part 2: A tetra-O-methylated pentasaccharide with high affinity for antithrombin III

AU Basten, J.; Jaurand, G.; Olde-Hanter, B.; Petitou, M.; van Boeckel, C. A. A.

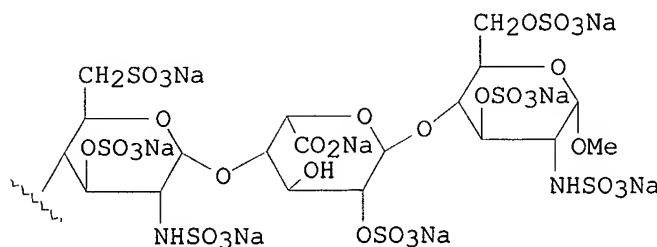
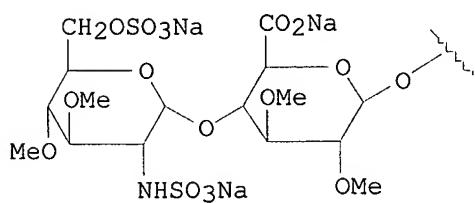
CS Organon Int. B.V., Oss., 5340 BH, Neth.

SO Bioorganic & Medicinal Chemistry Letters (1992), 2(9), 901-4  
CODEN: BMCLE8; ISSN: 0960-894X

DT Journal

LA English

GI



I

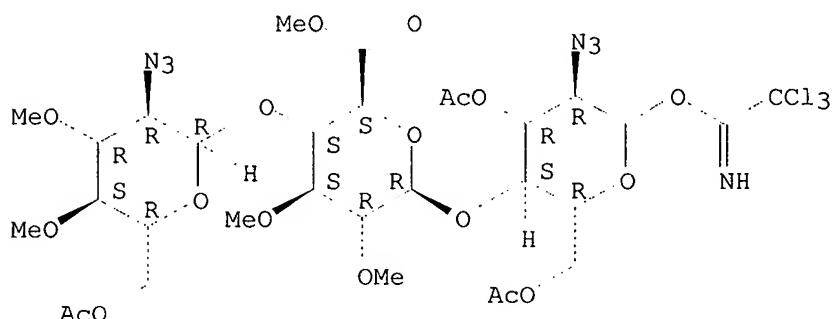
AB Heparin-like fragment tetra-O-methylated pentasaccharide I was prep'd. in 14 steps using glycosidation reactions with high affinity for antithrombin III.

IT 150126-08-2P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (prepn. of)

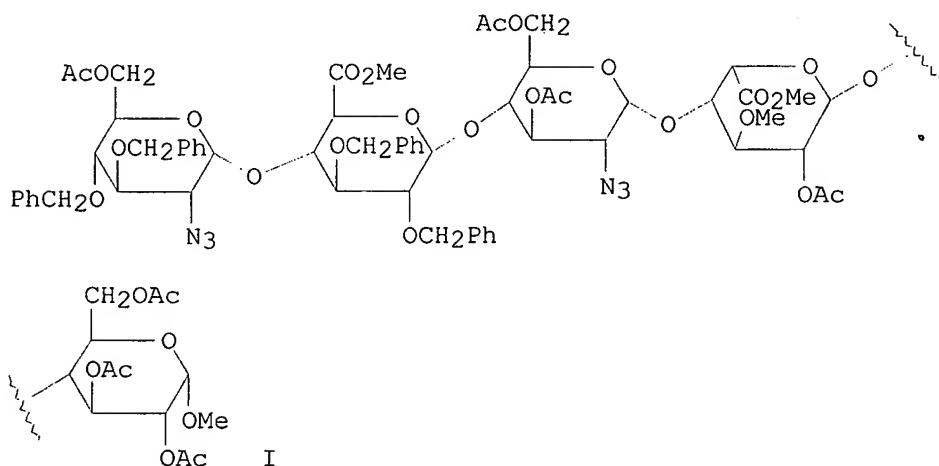
RN 150126-08-2 HCPLUS

CN D-Glucopyranose, O-6-O-acetyl-2-azido-2-deoxy-3,4-di-O-methyl-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-O-6-methyl-2,3-di-O-methyl-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-2-azido-2-deoxy-, 3,6-diacetate 1-(2,2,2-trichloroethanimidate) (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L29 ANSWER 13 OF 25 HCPLUS COPYRIGHT 2002 ACS  
 AN 1993:581118 HCPLUS  
 DN 119:181118  
 TI Biologically active heparin-like fragments with a "non-glycosamino" glycan structure. Part 1: A pentasaccharide containing a 3-O-methyl iduronic acid unit  
 AU Jaurand, G.; Basten, J.; Lederman, I; van Boeckel, C. A. A.; Petitou, M.  
 CS Sanofi Recher., Gentilly, 94256, Fr.  
 SO Bioorganic & Medicinal Chemistry Letters (1992), 2(9), 897-900  
 CODEN: BMCL8; ISSN: 0960-894X  
 DT Journal  
 LA English  
 GI



AB Heparin-like fragment pentasaccharide I was prep'd. via glycosidation reaction as antithrombotic agent. The introduction of a Me group at the 3 position of L-iduronic acid residue neither affects the AT III mediated anti-factor Xa activity nor alter the conformational properties of a unique heparin pentasaccharide sequence.

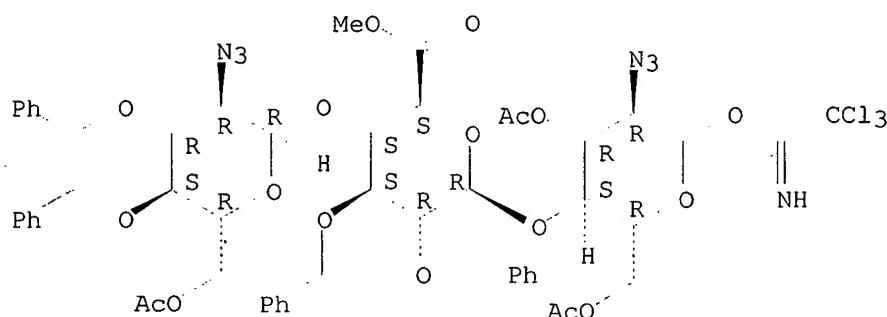
IT 150284-29-0

RL: RCT (Reactant); RACT (Reactant or reagent)  
(coupling of, with disaccharide)

RN 150284-29-0 HCAPLUS

CN D-Glucopyranose, O-6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-O-6-methyl-2,3-bis-O-(phenylmethyl)-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-2-azido-2-deoxy-, 3,6-diacetate 1-(2,2,2-trichloroethanimidate) (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L29 ANSWER 14 OF 25 HCAPLUS COPYRIGHT 2002 ACS

AN 1991:492770 HCAPLUS

DN 115:92770

TI A new, highly potent, heparin-like pentasaccharide fragment containing a glucose residue instead of a glucosamine

AU Petitou, M.; Jaurand, G.; Derrien, M.; Duchaussay, P.; Choay, J.

CS Cent. Choay, Sanofi Rech., Gentilly, 94256, Fr.

SO Bioorganic & Medicinal Chemistry Letters (1991), 1(2), 95-8  
CODEN: BMCLE8; ISSN: 0960-894X

DT Journal

LA English

GI For diagram(s), see printed CA Issue.

AB A new heparin-like pentasaccharide fragment (I) in which the reducing end glucosamine unit is replaced by a glucose residue was prep'd. This indicates that an O-sulfate can be substituted for an N-sulfate thereby allowing simpler synthesis of this kind of compd. A new route using a trisaccharide II as glycosyl donor was developed for this prepn.

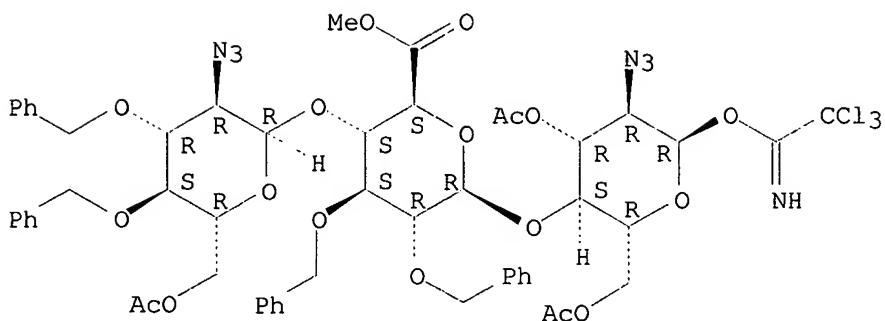
IT 135362-95-7P 135362-96-8P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(prepn. and coupling of, with disaccharide)

RN 135362-95-7 HCAPLUS

CN .alpha.-D-Glucopyranose, O-6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-O-6-methyl-2,3-bis-O-(phenylmethyl)-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-2-azido-2-deoxy-, 3,6-diacetate 1-(2,2,2-trichloroethanimidate) (9CI) (CA INDEX NAME)

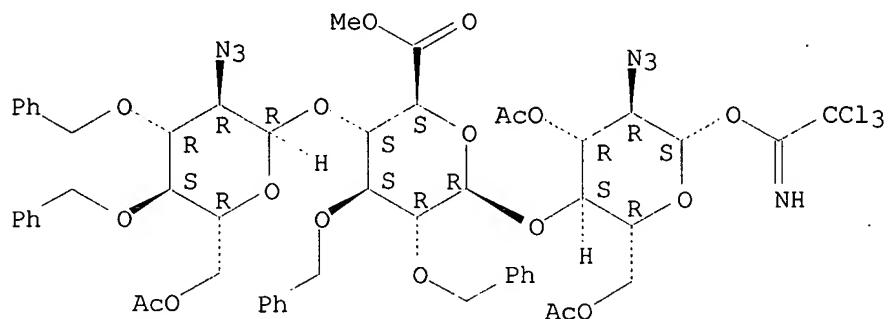
Absolute stereochemistry.



RN 135362-96-8 HCPLUS

CN .beta.-D-Glucopyranose, O-6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-O-6-methyl-2,3-bis-O-(phenylmethyl)-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-2-azido-2-deoxy-, 3,6-diacetate 1-(2,2,2-trichloroethanimidate) (9CI). (CA INDEX NAME)

Absolute stereochemistry.



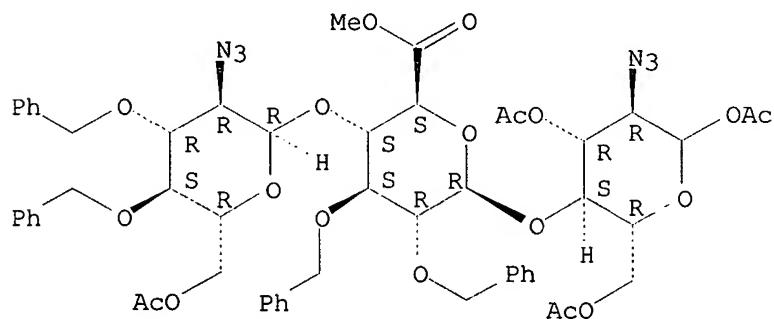
IT 99541-28-3P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(prepn. and deacetylation of)

RN 99541-28-3 HCPLUS

CN D-Glucopyranose, O-6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-O-6-methyl-2,3-bis-O-(phenylmethyl)-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-2-azido-2-deoxy-, 1,3,6-triacetate (9CI) (CA INDEX NAME)

Absolute stereochemistry.

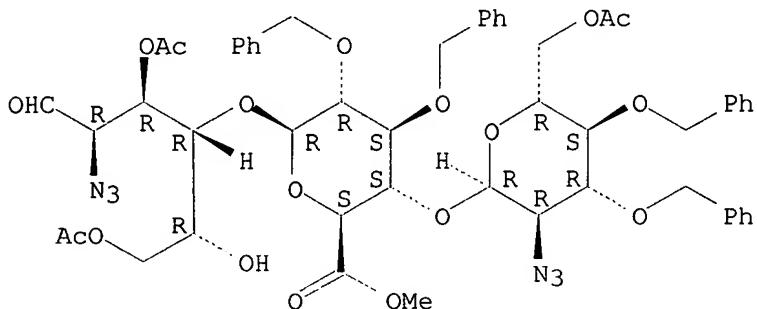


IT 115997-35-8P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(prepn. and reaction of, with trichloroacetonitrile)  
 RN 115997-35-8 HCPLUS  
 CN D-Glucose, 0-6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-O-6-methyl-2,3-bis-O-(phenylmethyl)-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-2-azido-2-deoxy-, 3,6-diacetate (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L29 ANSWER 15 OF 25 HCPLUS COPYRIGHT 2002 ACS

AN 1991:143864 HCPLUS

DN 114:143864

TI Syntheses of heparin-like pentamers containing opened uronic acid moieties

AU Lucas, H.; Basten, J. E. M.; Van Dinther, T. G.; Meuleman, D. G.; Van Aelst, S. F.; Van Boeckel, C. A. A.

CS AKZO Pharma Div., Organon Int. B. V., Oss, 5340 BH, Neth.

SO Tetrahedron (1990), 46(24), 8207-28

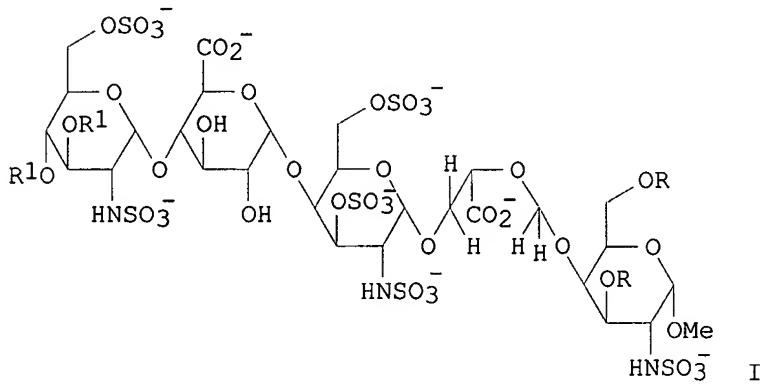
CODEN: TETRAB; ISSN: 0040-4020

DT Journal

LA English

OS CASREACT 114:143864

GI



AB The syntheses of pentasaccharides, e.g. I [R = R1 = H (II); R = SO3H, R1 = H (III), SO3H (IV)], which correspond to the minimal AT III binding region of heparin, and the biol. activities of these compds. are discussed. The key step in the syntheses of these "opened" uronic acid pentamers was the prepn. of the required glyceric acid oxymethylene residues e.g. (R)CH2:CHCH2OCH2CH(CO2Me)OCH2F. III and IV display a significant AT III mediated .alpha.Xa activity. Replacement of the .beta.-D-glucuronic acid unit by an S-glyceric acid oxymethylene residue, e.g. II, leads to almost

a complete loss of .alpha.Xa activity, notwithstanding the fact that all the essential and contributing charged groups are present in the mol.

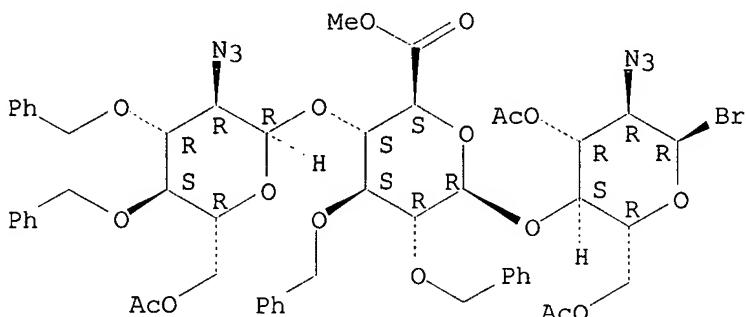
IT 132446-47-0

RL: RCT (Reactant); RACT (Reactant or reagent)  
(coupling of, with disaccharide)

RN 132446-47-0 HCPLUS

CN .alpha.-D-Glucopyranosyl bromide, O-6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-O-6-methyl-2,3-bis-O-(phenylmethyl)-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-2-azido-2-deoxy-, 3,6-diacetate (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L29 ANSWER 16 OF 25 HCPLUS COPYRIGHT 2002 ACS

AN 1988:529551 HCPLUS

DN 109:129551

TI Chemical synthesis of L-iduronic acid-containing disaccharidic fragments of heparin

AU Chiba, Taku; Jacquinet, Jean Claude; Sinay, Pierre; Petitou, Maurice; Choay, Jean

CS Lab. Biochim. Struct., Fac. Sci., Orleans, F-45067, Fr.

SO Carbohydrate Research (1988), 174, 253-64

CODEN: CRBRAT; ISSN: 0008-6215

DT Journal

LA English

OS CASREACT 109:129551

AB Condensation of Me 3-O-benzyl-2-benzyloxycarbonylamino-6-O-chloroacetyl-2-deoxy-.alpha.-D-glucopyranoside with Me (2,3,4-tri-O-acetyl-.alpha.-L-idopyranosyl bromide)uronate gave 83% Me 3-O-benzyl-2-benzyloxycarbonylamino-6-O-chloroacetyl-2-deoxy-4-O-(Me 2,3,4-tri-O-acetyl-.alpha.-L-idopyranosyluronate)-.alpha.-D-glucopyranoside. Dechloroacetylation followed successively by O-sulfation with SO3-Me3N, acetylation, and sapon. gave the disodium salt of Me 2-acetamido-2-deoxy-4-O-(.alpha.-L-idopyranosyluronate)-6-O-sulfo-.alpha.-D-glucopyranoside. Condensation of Me (Me 2,3-di-O-benzyl-.beta.-L-idopyranosid)uronate with 6-O-acetyl-2-azido-3,4-di-O-benzyl-2-deoxy-.alpha.-D-glucopyranosyl bromide gave Me [methyl 4-O-(6-O-acetyl-2-azido-3,4-di-O-benzyl-2-deoxy-.alpha.-D-glucopyranosyl)-2,3-di-O-benzyl-.beta.-L-idopyranosid]uronate. Sapon. followed successively by esterification, O-sulfation, sapon., catalytic hydrogenolysis, and selective N-sulfation gave the trisodium salt of Me 4-O-(2-deoxy-6-O-sulfo-2-sulfoamino-.alpha.-D-glucopyranosyl-.beta.-L-idopyranosiduronic acid).

IT 87326-96-3P

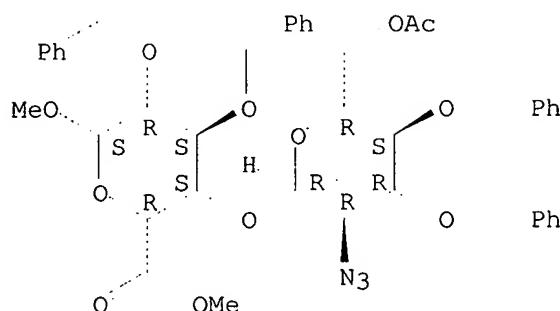
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(prepn. and deacetylation of)

RN 87326-96-3 HCPLUS

CN .beta.-L-Idopyranosiduronic acid, methyl 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-

(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



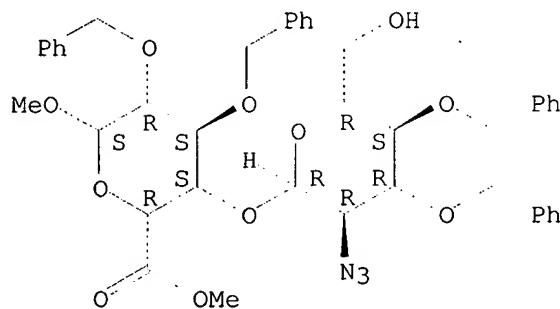
IT 87907-55-9P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(prepn. and sulfonation of)

RN 87907-55-9 HCPLUS

CN .beta.-L-Idopyranosiduronic acid, methyl 4-O-[2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L29 ANSWER 17 OF 25 HCPLUS COPYRIGHT 2002 ACS

AN 1988:510766 HCPLUS

DN 109:110766

TI Synthetic studies on mucopolysaccharides. Part V. Synthesis of methyl glycoside derivatives of tri- and pentasaccharides related to the antithrombin III binding sequence of heparin, employing cellobiose as a key starting material

AU Ichikawa, Yoshitaka; Monden, Ryuji; Kuzuhara, Hiroyoshi

CS RIKEN, Wako, 351-01, Japan

SO Carbohydrate Research (1988), 172(1), 37-64

CODEN: CRBRAT; ISSN: 0008-6215

DT Journal

LA English

OS CASREACT 109:110766

GI

AB Two key synthons for the title pentasaccharide deriv., Me O-(methyl-2-O-benzoyl-3-O-benzyl-.alpha.-L-idopyranosyluronate)-(1 .fwdarw. 4)-6-O-acetyl-2-azido-3-O-benzyl-2-deoxy-.beta.-D-glucopyranoside and O-(Me 2,3-di-O-benzyl-4-O-chloroacetyl-.beta.-D-glucopyranosyluronate)-(1 .fwdarw. 4)-3,6-di-O-acetyl-2-azido-2-deoxy-.alpha.-D-glucopyranosyl bromide, were prep'd. from cellobiose. They were coupled to give a tetrasaccharide deriv. that underwent O-dechloroacetylation to the corresponding glycosyl acceptor. Its condensation with the known 6-O-acetyl-2-azido-3,4-di-O-benzyl-2-deoxy-.alpha.-D-glucopyranosyl bromide afforded a 77% yield of suitably protected pentasaccharide, Me O-6-O-acetyl-2-azido-3,4-di-O-benzyl-2-deoxy-.alpha.-D-glucopyranosyl-(1 .fwdarw. 4)-O-(Me 2,3-di-O-benzyl-.beta.-D-glucopyranosyluronate)-(1 .fwdarw. 4)-O-(3,6-di-O-acetyl-2-azido-2-deoxy-.alpha.-D-glucopyranosyl)-(1 .fwdarw. 4)-O-(Me 2-O-benzoyl-3-O-benzyl-.alpha.-L-idopyranosyluronate)-(1 .fwdarw. 4)-6-O-acetyl-2-azido-3-O-benzyl-2-deoxy-.beta.-D-glucopyranoside. Sequential deprotection and sulfation gave the decasodium salt of Me sulfamidosulfo trisaccharide glycoside I. In a similar way, the trisaccharide deriv., the hexasodium salt of Me O-(2-deoxy-2-sulfamido-6-O-sulfo-.alpha.-D-glucopyranosyl)-(1 .fwdarw. 4)-O-(.beta.-D-glucopyranosyluronate)-(1 .fwdarw. 4)-2-deoxy-2-sulfamido-3,6-di-O-sulfo-.alpha.-D-glucopyranoside (II) was synthesized from Me O-(6-O-acetyl-2-azido-3,4-di-O-benzyl-2-deoxy-.alpha.-D-glucopyranosyl)-(1 .fwdarw. 4)-O-(Me 2,3-di-O-benzyl-.beta.-D-glucopyranosyluronate)-3,6-di-O-acetyl-2-azido-2-deoxy-.alpha.-D-glucopyranoside. The pentasaccharide I binds strongly to antithrombin III with an assocn. const. almost equiv. to that of high-affinity heparin, but the trisaccharide II appears not to bind.

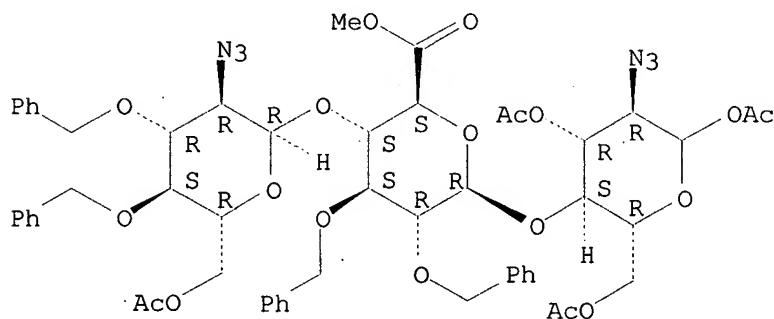
IT 99541-28-3

RL: RCT (Reactant); RACT (Reactant or reagent)  
(deacetylation of)

RN 99541-28-3 HCPLUS

CN D-Glucopyranose, O-6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-O-6-methyl-2,3-bis-O-(phenylmethyl)-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-2-azido-2-deoxy-, 1,3,6-triacetate (9CI) (CA INDEX NAME)

Absolute stereochemistry.



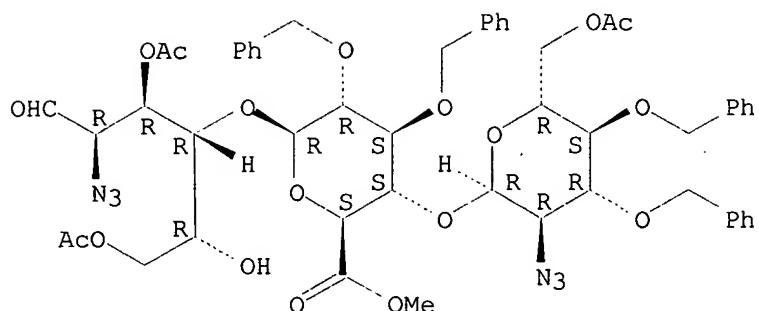
IT 115997-35-8P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(prepn. and chlorination of)

RN 115997-35-8 HCPLUS

CN D-Glucose, O-6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-O-6-methyl-2,3-bis-O-(phenylmethyl)-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-2-azido-2-deoxy-, 3,6-diacetate (9CI) (CA INDEX NAME)

Absolute stereochemistry.



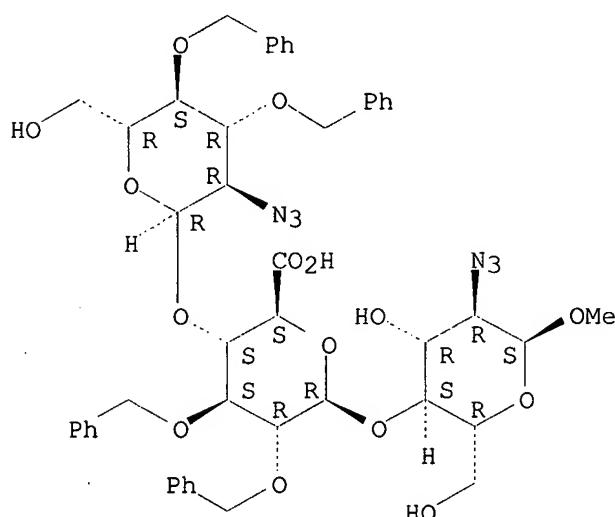
IT 115997-47-2P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(prepn. and esterification of)

RN 115997-47-2 HCPLUS

CN .alpha.-D-Glucopyranoside, methyl O-2-azido-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-O-2,3-bis-O-(phenylmethyl)-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-2-azido-2-deoxy- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



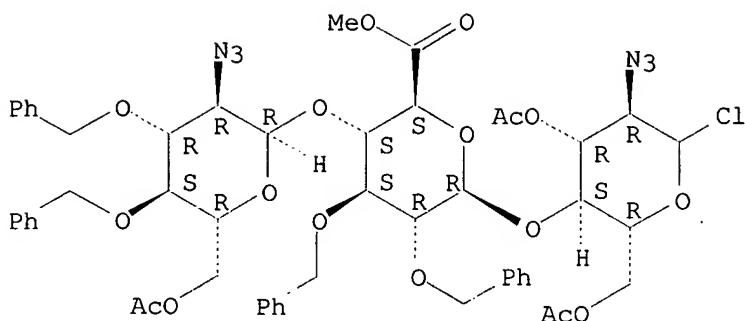
IT 115997-36-9P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(prepn. and methanolysis of, in presence of mercuric bromide)

RN 115997-36-9 HCPLUS

CN D-Glucopyranosyl chloride, O-6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-O-6-methyl-2,3-bis-O-(phenylmethyl)-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-2-azido-2-deoxy-, 3,6-diacetate (9CI) (CA INDEX NAME)

Absolute stereochemistry.



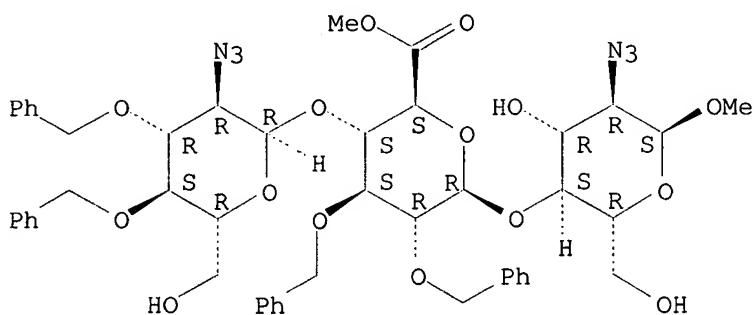
IT 104545-79-1P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(prepn. and sulfation of)

RN 104545-79-1 HCPLUS

CN .alpha.-D-Glucopyranoside, methyl O-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-O-6-methyl-2,3-bis-O-(phenylmethyl)-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-2-azido-2-deoxy- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



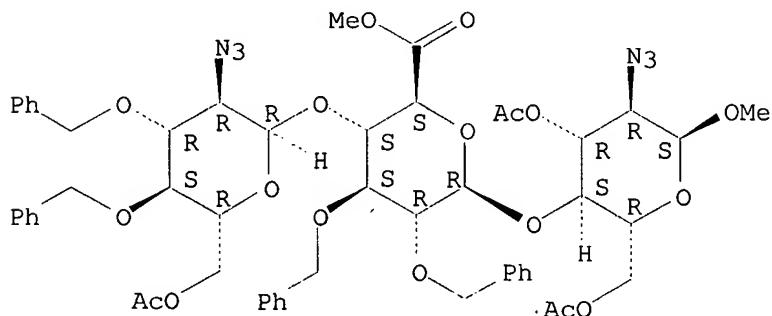
IT 104545-78-0P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(prepn. and O-deacetylation of)

RN 104545-78-0 HCPLUS

CN .alpha.-D-Glucopyranoside, methyl O-6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-O-6-methyl-2,3-bis-O-(phenylmethyl)-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-2-azido-2-deoxy-, 3,6-diacetate (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L29 ANSWER 18 OF 25 HCAPLUS COPYRIGHT 2002 ACS  
 AN 1986:591571 HCAPLUS  
 DN 105:191571  
 TI Disaccharides having a glucosamine and uronic acid structure, and their biological applications  
 IN Petitou, Maurice; Sinay, Pierre; Choay, Jean; Lormeau, Jean Claude  
 PA Choay S. A., Fr.  
 SO U.S., 10 pp.  
 CODEN: USXXAM  
 DT Patent  
 LA English  
 FAN.CNT 5

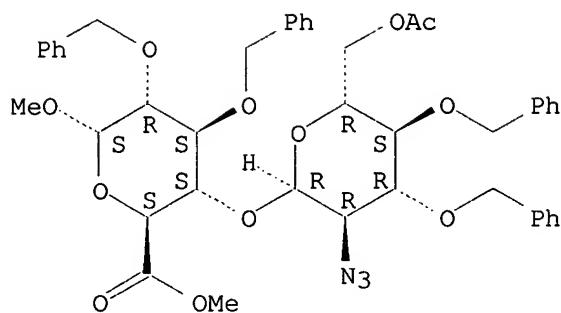
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	US 4607025	A	19860819	US 1982-451615	19821220	<-- <del>4</del> ✓
	US 4774231	A	19880927	US 1986-888527	19860721	<-- <del>4</del> ✓
	US 4818816	A	19890404	US 1987-115593	19871026	<-- <del>4</del> ✓
PRAI	FR 1981-8472		19810428	<--		
	FR 1982-621		19820115	<--		
	FR 1982-1575		19820201	<--		
	FR 1982-2526		19820216	<--		
	FR 1982-9392		19820528	<--		
	FR 1982-10891		19820622	<--		
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	FR 1982-18003		19821027	<--		
	US 1982-451615		19821220	<--		
	US 1983-457931		19830114	<--		

OS CASREACT 105:191571  
 GI For diagram(s), see printed CA Issue.  
 AB The title disaccharides (I; R = alkyl, aryl; R1 = H, alkyl, metal cation; R2 = H, PhCH2; R3 = H, Ac, SO3R5; R4 = N3, AcNH, NHSO3R6; R5, R6 = alkali metal cation) were prep'd. as antithrombotics. Thus, Me 2,3-di-O-benzyl-.alpha.-D-glucopyranoside was converted in 6 steps to Me (Me 2,3-di-O-benzyl-.alpha.-D-glucopyranoside)uronate. This was treated with a protected azidodeoxyglucopyranosyl bromide to give disaccharide I (R = R1 = Me, R2 = PhCH2 R3 = Ac, R4 = N3). The latter was deacetylated, sulfated, and hydrogenated over Pd/C to give I (R = R1 = Me, R2 = H, R3 = SO3Na, R4 = NH2) which was converted in 4 steps to II (R = Me, R1 = Na, R2 = H, R3 = SO3Na, R4 = NHSO3Na) (II). II is active in the Yin-Wessler test for antithrombotics.

IT 85750-89-6P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (prepn. and deacetylation of)

RN 85750-89-6 HCAPLUS  
 CN .alpha.-D-Glucopyranosiduronic acid, methyl 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



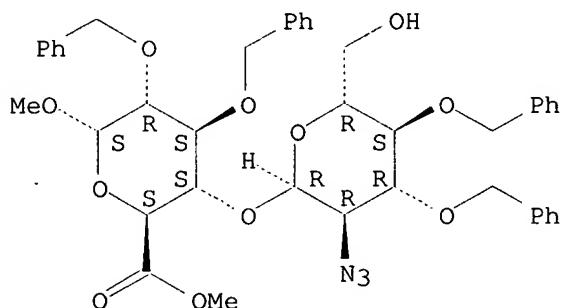
IT 85743-92-6P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(prepn. and sulfation of)

RN 85743-92-6 HCPLUS

CN .alpha.-D-Glucopyranosiduronic acid, methyl 4-O-[2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L29 ANSWER 19 OF 25 HCPLUS COPYRIGHT 2002 ACS

AN 1986:572985 HCPLUS

DN 105:172985

TI Oligosaccharides

IN Petitou, Maurice; Lormeau, Jean Claude; Choay, Jean; Jacquinet, Jean Claude; Sinay, Pierre

PA Choay S. A., Fr.

SO Fr. Demande, 48 pp. Add. to Fr. Demande Appl. No. 82 18003.

CODEN: FRXXBL

DT Patent

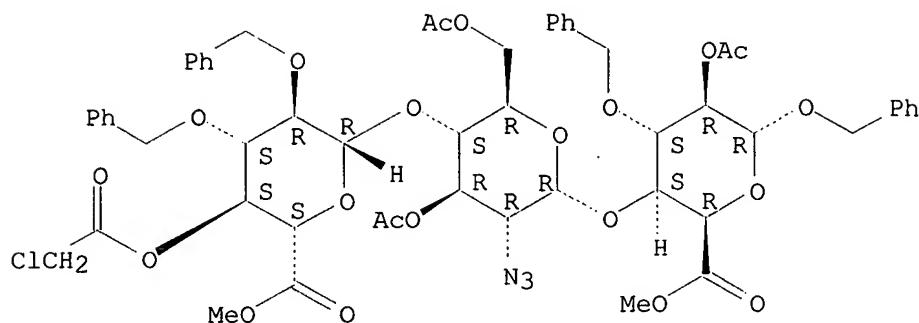
LA French

FAN.CNT 5

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	FR 2564468	A2	19851122	FR 1984-7589	19840516 <--
	FR 2564468	B2	19941223		
	FR 2535324	A1	19840504	FR 1982-18003	19821027 <--
	WO 8401777	A1	19840510	WO 1983-FR217	19831027 <--
	W: AU, DK, JP, SU, US				
	AU 8321285	A1	19840522	AU 1983-21285	19831027 <--
	AU 581167	B2	19890216		
	EP 113599	A1	19840718	EP 1983-402109	19831027 <--
	EP 113599	B1	19890201		
	R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE				

JP 59501906	T2	19841115	JP 1983-503432	19831027 <--
JP 05066392	B4	19930921		
ES 527144	A1	19841216	ES 1983-527144	19831027 <--
AT 40555	E	19890215	AT 1983-402109	19831027 <--
CA 1258452	A1	19890815	CA 1983-439811	19831027 <--
DK 8403135	A	19840627	DK 1984-3135	19840627 <--
DK 8502159	A	19851117	DK 1985-2159	19850515 <--
EP 165134	A2	19851218	EP 1985-400953	19850515 <--
EP 165134	A3	19880224		
EP 165134	B1	19930203		
R: AT, BE, CH, DE, GB, IT, LI, LU, NL, SE				
ZA 8503694	A	19860129	ZA 1985-3694	19850515 <--
US 4801583	A	19890131	US 1985-734445	19850515 <-- <del>-----</del>
<u>CA 1265792</u>	A1	19900213	CA 1985-481588	19850515 <--
AT 85341	E	19930215	AT 1985-400953	19850515 <--
AU 8542637	A1	19851121	AU 1985-42637	19850516 <--
AU 582362	B2	19890323		
JP 60260590	A2	19851223	JP 1985-104931	19850516 <--
JP 07108911	B4	19951122		
US 4943630	A	19900724	US 1986-856855	19860421 <--
JP 05262783	A2	19931012	JP 1992-115408	19920408 <--
JP 2510925	B2	19960626		
PRAI FR 1982-18003		19821027	<--	
FR 1982-621		19820115	<--	
FR 1982-1575		19820201	<--	
FR 1982-2526		19820216	<--	
FR 1982-9392		19820528	<--	
FR 1982-10891		19820622	<--	
FR 1982-10892		19820622	<--	
FR 1982-11679		19820702	<--	
FR 1982-13804		19820806	<--	
FR 1982-15803		19820920	<--	
FR 1982-15804		19820920	<--	
US 1983-457931		19830114	<--	
EP 1983-402109		19831027	<--	
WO 1983-FR217		19831027	<--	
FR 1984-7589		19840516	<--	
US 1984-624628		19840626	<--	
EP 1985-400953		19850515	<--	
GI For diagram(s), see printed CA Issue.				
AB Oligosaccharides contg. segments I [R1-R4 = SO3H, P(O)(OH)2; R5-R8 = H, SO3H, P(O)(OH)2; R9, R10 = NH2, acylamino], which were prep'd., showed antithrombotic activity. Pentasaccharide II was prep'd. in a series of reactions.				
IT 104616-03-7P 104616-04-8P				
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)				
(prepn. and reaction of)				
RN 104616-03-7 HCPLUS				
CN .alpha.-L-Idopyranosiduronic acid, phenylmethyl 0-4-O-(chloroacetyl)-6-methyl-2,3-bis-O-(phenylmethyl)-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-O-3,6-di-O-acetyl-2-azido-2-deoxy-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-3-O-(phenylmethyl)-, methyl ester, 2-acetate (9CI) (CA INDEX NAME)				

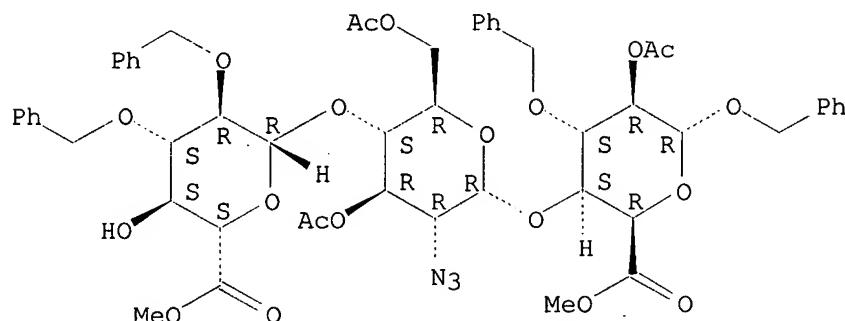
Absolute stereochemistry.



RN 104616-04-8 HCPLUS

CN .alpha.-L-Idopyranosiduronic acid, phenylmethyl O-6-methyl-2,3-bis-O-(phenylmethyl)-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-O-3,6-di-O-acetyl-2-azido-2-deoxy-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-3-O-(phenylmethyl)-, methyl ester, 2-acetate (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L29 ANSWER 20 OF 25 HCPLUS COPYRIGHT 2002 ACS

AN 1986:553457 HCPLUS

DN 105:153457

TI Synthesis of heparin fragment with high affinity for antithrombin III, utilizing a disaccharide synthon

AU Ichikawa, Yukihiko; Monden, Ryuiji; Kuzuhara, Hiromi

CS Inst. Phys. Chem. Res., Wako, Japan

SO Tennen Yuki Kagobutsu Toronkai Koen Yoshishu (1985), 27th, 9-16  
CODEN: TYKYDS

DT Journal

LA Japanese

GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB A complex pentasaccharide, which is the antithrombin III-binding sequence of heparin, was prep'd. The disaccharides I and II, obtained from cellobiose, and the monosaccharide III were the key intermediates.

IT 104545-78-0P 104545-79-1P

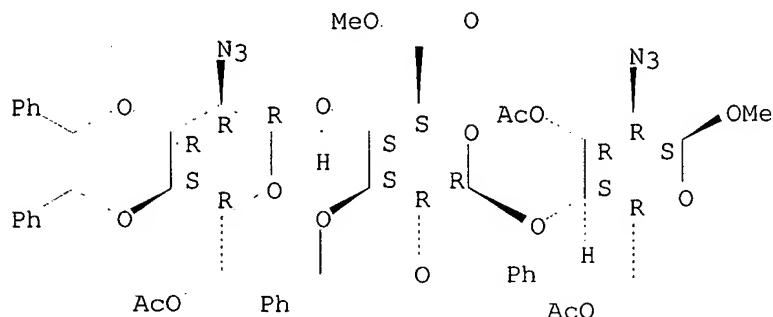
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of, intermediate in synthesis of heparin fragment)

RN 104545-78-0 HCPLUS

CN .alpha.-D-Glucopyranoside, methyl O-6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-O-6-methyl-2,3-bis-O-

(phenylmethyl)-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-2-azido-2-deoxy-,  
3,6-diacetate (9CI) (CA INDEX NAME)

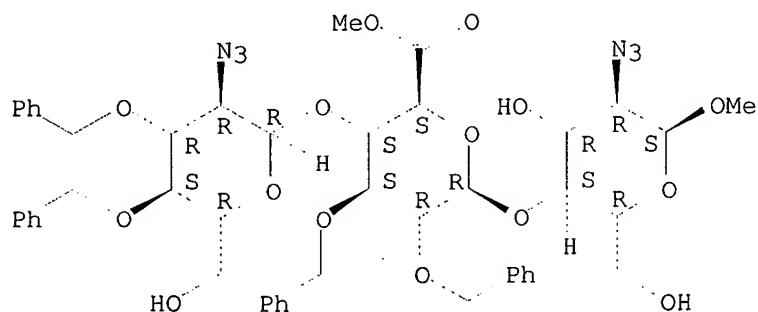
Absolute stereochemistry.



RN 104545-79-1 HCAPLUS

CN .alpha.-D-Glucopyranoside, methyl O-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-O-6-methyl-2,3-bis-O-(phenylmethyl)-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-2-azido-2-deoxy- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L29 ANSWER 21 OF 25 HCAPLUS COPYRIGHT 2002 ACS

AN 1986:130179 HCAPLUS

DN 104:130179

TI Synthetic studies on mucopolysaccharides. Part III. Synthesis, from cellobiose of a trisaccharide closely related to the GlcNAc.fwdarw.GlcA.fwdarw.GlcN segment of the antithrombin-binding sequence of heparin

AU Ichikawa, Yoshitaka; Ichikawa, Ryuji; Kuzuhara, Hiroyoshi

CS Inst. Phys. Chem. Res., RIKEN, Wako, 351-01, Japan

SO Carbohydrate Research (1985), 141(2), 273-82

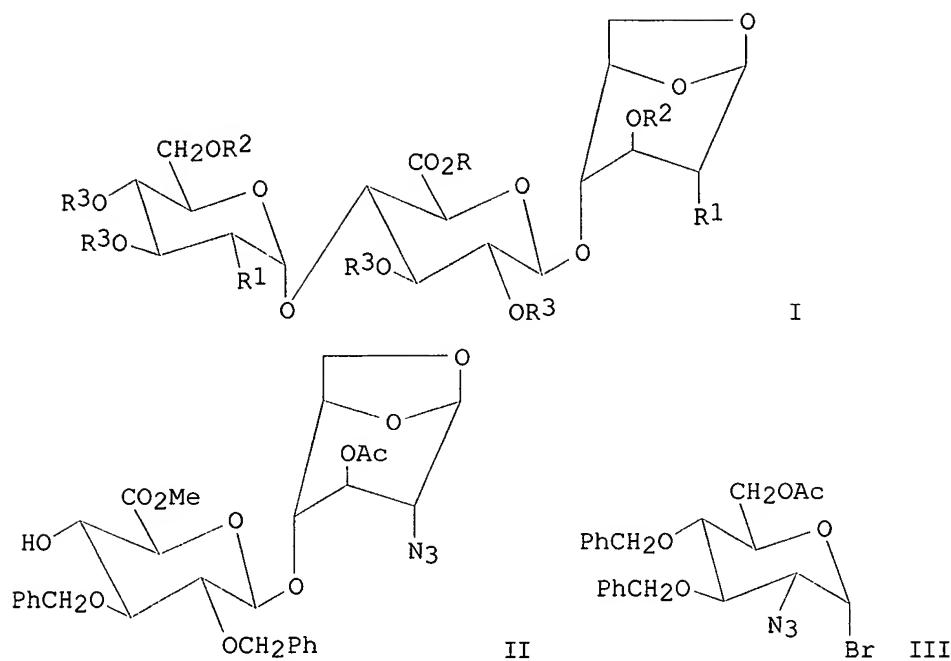
CODEN: CRBRAT; ISSN: 0008-6215

DT Journal

LA English

OS CASREACT 104:130179

GI



AB Azidoglucopyranose trisaccharide I ( $R = Me$ ,  $R1 = N3$ ,  $R2 = Ac$ ,  $R3 = CH2Ph$ ) was prep'd. by glycosidation of glucopyranosyl bromide II with anhydroazidoglucopyranose III in the presence of  $HgBr2$  and mol. sieves. Subsequently azide redn. and sulfonation with  $SO3.NMe3$  yielded the heparin-related oligosaccharide I ( $R = Na$ ,  $R1 = NHSO3Na$ ,  $R2 = SO3N$ ,  $R3 = H$ ). I ( $R = Me$ ,  $R1 = N3$ ,  $R2 = Ac$ ,  $R3 = CH2Ph$ ) also underwent acetolysis with  $Ac2O$  and  $CF3CO2H$ .

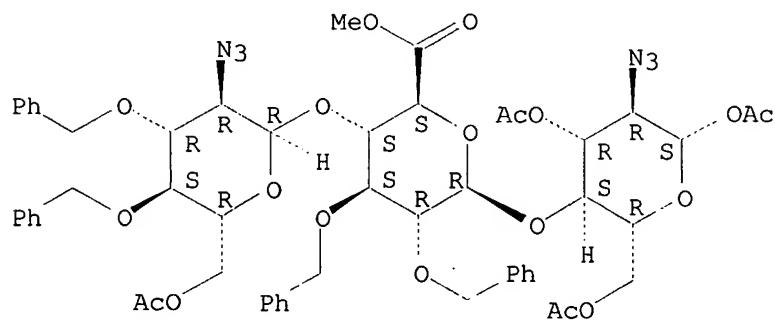
IT 100838-13-9P 100838-64-0P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of)

RN 100838-13-9 HCPLUS

CN .beta.-D-Glucopyranose, O-6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-O-6-methyl-2,3-bis-O-(phenylmethyl)-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-2-azido-2-deoxy-, 1,3,6-triacetate (9CI) (CA INDEX NAME)

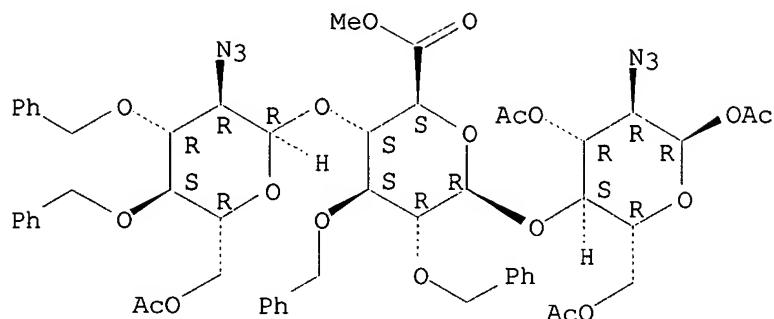
Absolute stereochemistry.



RN 100838-64-0 HCPLUS

CN .alpha.-D-Glucopyranose, O-6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-O-6-methyl-2,3-bis-O-(phenylmethyl)-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-2-azido-2-deoxy-, 1,3,6-triacetate (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L29 ANSWER 22 OF 25 HCPLUS COPYRIGHT 2002 ACS

AN 1986:19773 HCPLUS

DN 104:19773

TI Trisaccharides

PA Institute of Physical and Chemical Research, Japan

SO Jpn. Kokai Tokkyo Koho, 14 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 60094989	A2	19850528	JP 1983-204440	19831031 <--

GI For diagram(s), see printed CA Issue.

AB Trisaccharide deriv. I ( $Q = PhCH_2$ ), potential antithrombotic (no data), was prep'd. by cyclocondensation of the benzylidenated disaccharide II with  $(Me_2CH)_2SiClOSiCl(CHMe_2)_2$ , deacetylation of the resulting IV, benzylation, desilylation, epoxidn., azidolysis/acetylation, debenzylidenation, tritylation/chloroacetylation, deacetylation, Jones oxidn./methylation, dechloroacetylation, condensation with the bromomonosaccharide deriv. V, and acetolysis.

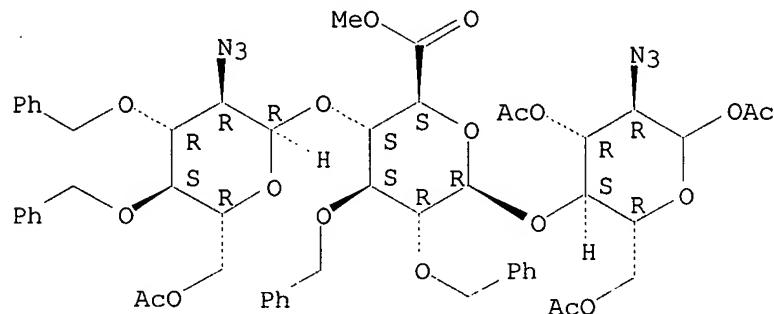
IT 99541-28-3P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of, as potential antithrombotic)

RN 99541-28-3 HCPLUS

CN D-Glucopyranose, O-6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-O-6-methyl-2,3-bis-O-(phenylmethyl)-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-2-azido-2-deoxy-, 1,3,6-triacetate (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L29 ANSWER 23 OF 25 HCPLUS COPYRIGHT 2002 ACS  
 AN 1984:7066 HCPLUS  
 DN 100:7066  
 TI Organic oligosaccharides, corresponding to fragments of natural mucopolysaccharides, and their biological applications  
 IN Petitou, Maurice; Jacquinet, Jean Claude; Sinay, Pierre; Choay, Jean; Lormeau, Jean Claude; Nassr, Mahmoud  
 PA Choay S. A., Fr.  
 SO Eur. Pat. Appl., 187 pp.  
 CODEN: EPXXDW

DT Patent  
 LA French

FAN.CNT 5

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 84999	A1	19830803	EP 1983-400110	19830117 <--
	EP 84999	B1	19880413		
	R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE				
	FR 2519987	A1	19830722	FR 1982-621	19820115 <--
	FR 2520744	A1	19830805	FR 1982-1575	19820201 <--
	FR 2521566	A1	19830819	FR 1982-2526	19820216 <--
	FR 2527614	A1	19831202	FR 1982-9392	19820528 <--
	FR 2528853	A1	19831223	FR 1982-10891	19820622 <--
	FR 2528854	A1	19831223	FR 1982-10892	19820622 <--
	FR 2529557	A1	19840106	FR 1982-11679	19820702 <--
	FR 2531436	A1	19840210	FR 1982-13804	19820806 <--
	FR 2533219	A1	19840323	FR 1982-15803	19820920 <--
	FR 2533220	A1	19840323	FR 1982-15804	19820920 <--
	FR 2535324	A1	19840504	FR 1982-18003	19821027 <--
	US 4987223	A	19910122	US 1982-453731	19821027 <--
	CA 1265132	A1	19900130	CA 1983-419417	19830113 <--
	DK 8300143	A	19830716	DK 1983-143	19830114 <--
	AU 8310397	A1	19830721	AU 1983-10397	19830114 <--
	AU 563351	B2	19870709		
	JP 58170797	A2	19831007	JP 1983-5178	19830114 <--
	JP 05065517	B4	19930917		
	ES 519232	A1	19840316	ES 1983-519232	19830114 <--
	SU 1694065	A3	19911123	SU 1983-3545151	19830114 <--
	AT 33496	E	19880415	AT 1983-400110	19830117 <--
	AU 8321285	A1	19840522	AU 1983-21285	19831027 <--
	AU 581167	B2	19890216		
	JP 59501906	T2	19841115	JP 1983-503432	19831027 <--
	JP 05066392	B4	19930921		
	AT 40555	E	19890215	AT 1983-402109	19831027 <--
	DK 8403135	A	19840627	DK 1984-3135	19840627 <--
	US 4943630	A	19900724	US 1986-856855	19860421 <--
	JP 05331182	A2	19931214	JP 1992-115407	19920408 <--
	JP 2510454	B2	19960626		
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	FR 1982-18003		19821027	<--	
	FR 1981-24132		19811223	<--	
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	EP 1983-400110		19830117	<--	
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WO 1983-FR217

19831027 &lt;--

US 1984-624628

19840626 &lt;--

OS CASREACT 100:7066

GI For diagram(s), see printed CA Issue.

AB Mucopolysaccharide fragments were synthesized. Thus the pentasaccharide I was prep'd from the monosaccharides in a synthesis comprising many steps. I has factor Xa antagonist activity &gt;2000 U/mg.

IT 87326-96-3P

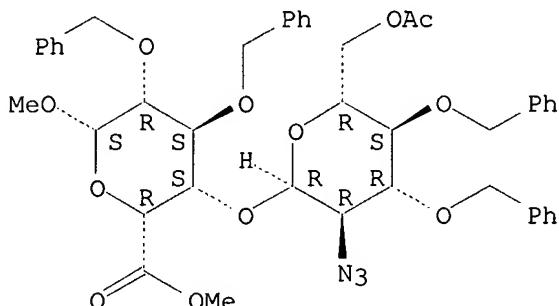
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(prepn. and deacetylation of)

RN 87326-96-3 HCPLUS

CN .beta.-L-Idopyranosiduronic acid, methyl 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



IT 87326-45-2P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

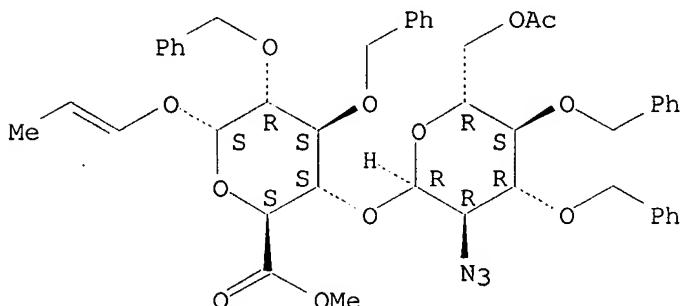
(prepn. and dealkylation of)

RN 87326-45-2 HCPLUS

CN .alpha.-D-Glucopyranosiduronic acid, 1-propenyl 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.

Double bond geometry unknown.



IT 87907-19-5P 87907-20-8P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

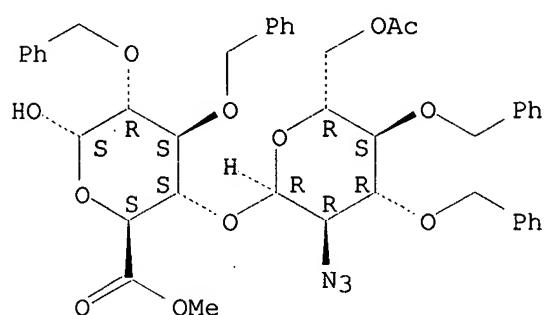
(prepn. and hydrogenation of)

RN 87907-19-5 HCPLUS

CN .alpha.-D-Glucopyranuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, methyl

ester (9CI) (CA INDEX NAME)

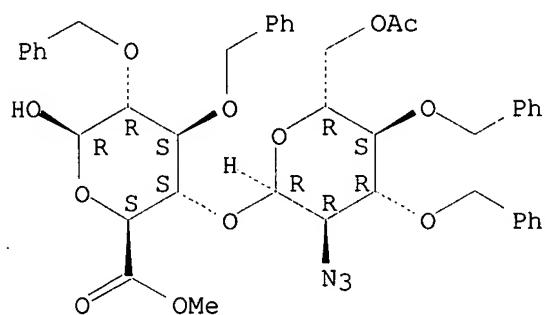
Absolute stereochemistry.



RN 87907-20-8 HCAPLUS

CN .beta.-D-Glucopyranuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



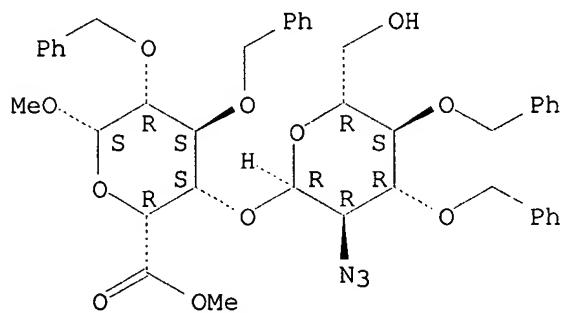
IT 87907-55-9P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(prepn. and sulfonylation of)

RN 87907-55-9 HCAPLUS

CN .beta.-L-Idopyranosiduronic acid, methyl 4-O-[2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.

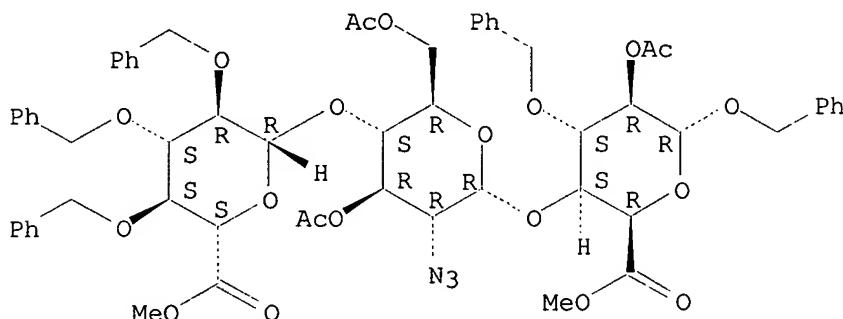


IT 87327-02-4P

RL: SPN (Synthetic preparation); PREP (Preparation)

(prepn. of)  
 RN 87327-02-4 HCPLUS  
 CN .alpha.-L-Idopyranosiduronic acid, phenylmethyl O-6-methyl-2,3,4-tris-O-(phenylmethyl)-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-O-3,6-di-O-acetyl-2-azido-2-deoxy-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-3-O-(phenylmethyl)-, methyl ester, 2-acetate (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L29 ANSWER 24 OF 25 HCPLUS COPYRIGHT 2002 ACS

AN 1983:558783 HCPLUS

DN 99:158783

TI Derivatives with a uronic acid structure and their biological applications

IN Choay, Jean; Jacquinet, Jean Claude; Petitou, Maurice; Sinay, Pierre

PA Choay S. A., Fr.

SO Eur. Pat. Appl., 84 pp.

CODEN: EPXXDW

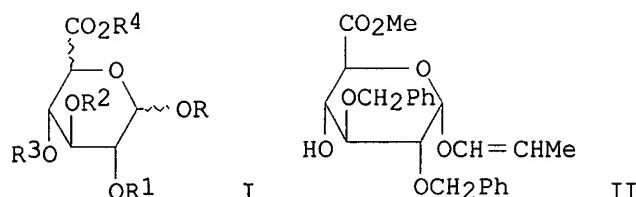
DT Patent

LA French

FAN.CNT 5

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 82793	A1	19830629	EP 1982-402378	19821223 <--
	EP 82793	B1	19890510		
	R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE				
	FR 2518550	A1	19830624	FR 1981-24132	19811223 <--
	FR 2519987	A1	19830722	FR 1982-621	19820115 <--
	FR 2520744	A1	19830805	FR 1982-1575	19820201 <--
	EP 64012	A1	19821103	EP 1982-400770	19820428 <--
	EP 64012	B1	19860723		
	R: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE				
	FR 2527614	A1	19831202	FR 1982-9392	19820528 <--
	FR 2531436	A1	19840210	FR 1982-13804	19820806 <--
	FR 2533219	A1	19840323	FR 1982-15803	19820920 <--
	FR 2533220	A1	19840323	FR 1982-15804	19820920 <--
	FR 2535323	A1	19840504	FR 1982-18001	19821027 <--
	FR 2535323	B1	19870814		
	US 4987223	A	19910122	US 1982-453731	19821027 <--
	AT 42956	E	19890515	AT 1982-402378	19821223 <--
	SU 1694065	A3	19911123	SU 1983-3545151	19830114 <--
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	FR 1982-621		19820115 <--		
	FR 1982-1575		19820201 <--		
	EP 1982-400770		19820428 <--		
	FR 1982-9392		19820528 <--		
	FR 1982-13804		19820806 <--		
	FR 1982-15803		19820920 <--		
	FR 1982-15804		19820920 <--		
	FR 1982-18001		19821027 <--		

FR 1981-8472 19810428 <--  
FR 1982-2526 19820216 <--  
FR 1982-10891 19820622 <--  
FR 1982-10892 19820622 <--  
EP 1982-402378 19821223 <--  
OS CASREACT 99:158783  
GT



AB Uronic acids I (OR-OR<sub>4</sub> = reactive group, functionalizable group, protected OH) were prep'd. for use as intermediates in the prepn. of enzyme substrates, haptens, or reagents. Thus, II was prep'd. from glucose in 11 steps via glycosidation with allyl alc., CrO<sub>3</sub> oxidn., and isomerization of the allyl glycoside.

IT 87326-45-2P 87326-96-3P 87327-02-4P

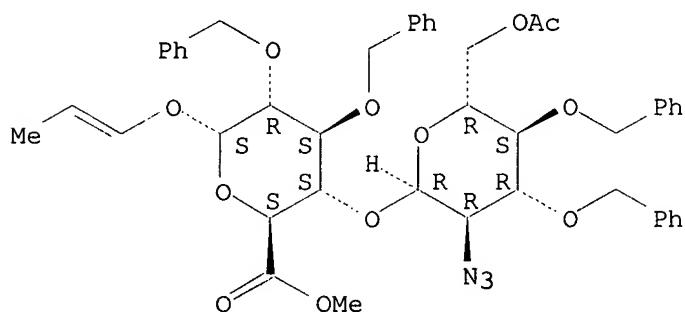
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of)

RN 87326-45-2 HCAPLUS

CN .alpha.-D-Glucopyranosiduronic acid, 1-propenyl 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

## Absolute stereochemistry

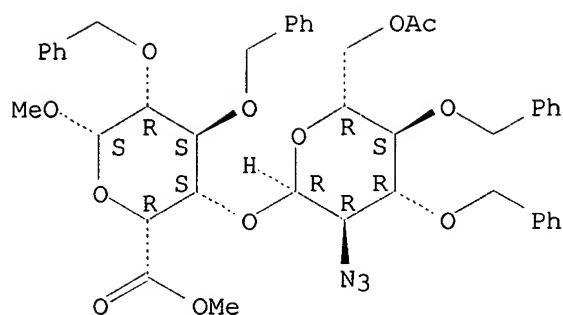
Double bond geometry unknown.



RN 87326-96-3 HCAPLUS

CN .beta.-L-Idopyranosiduronic acid, methyl 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

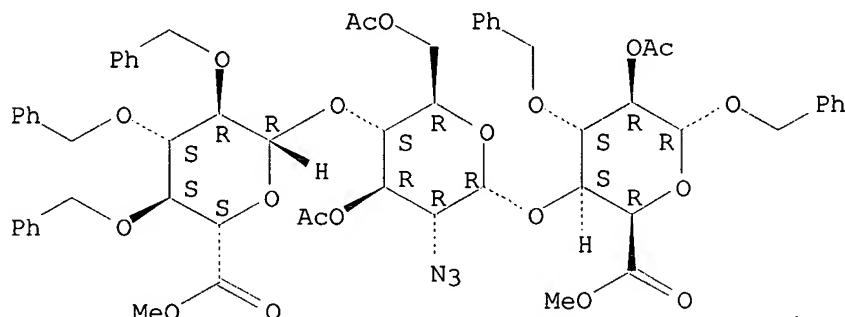
## Absolute stereochemistry.



RN 87327-02-4 HCPLUS

CN .alpha.-L-Idopyranosiduronic acid, phenylmethyl O-6-methyl-2,3,4-tris-O-(phenylmethyl)-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-O-3,6-di-O-acetyl-2-azido-2-deoxy-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-3-O-(phenylmethyl)-, methyl ester, 2-acetate (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L29 ANSWER 25 OF 25 HCPLUS COPYRIGHT 2002 ACS

AN 1983:198659 HCPLUS

DN 98:198659

TI Disaccharides having units with a glucosamine and with a uronic-acid structure and their biological application

IN Petitou, Maurice; Sinay, Pierre; Choay, Jean; Lormeau, Jean Claude

PA Choay S. A., Fr.

SO Eur. Pat. Appl., 28 pp.

CODEN: EPXXDW

DT Patent

LA French

FAN.CNT 5

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI EP 64012	A1	19821103	EP 1982-400770	19820428 <--
EP 64012	B1	19860723		
R: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE				
FR 2504535	A1	19821029	FR 1981-8472	19810428 <--
FR 2504535	B1	19870814		
WO 8203863	A1	19821111	WO 1982-FR76	19820428 <--
W: AU, DK, JP, SU, US				
AU 8283955	A1	19821124	AU 1982-83955	19820428 <--
AU 558472	B2	19870129		
ES 512381	A1	19830301	ES 1982-512381	19820428 <--
JP 58500564	T2	19830414	JP 1982-501461	19820428 <--
JP 03013240	B4	19910222		

AT 20894	E	19860815	AT 1982-400770	19820428	<--
CA 1263381	A1	19891128	CA 1982-401832	19820428	<--
CA 1247608	A1	19881227	CA 1982-418397	19821222	<--
EP 82793	A1	19830629	EP 1982-402378	19821223	<--
EP 82793	B1	19890510			
R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE					
JP 59010599	A2	19840120	JP 1982-234948	19821223	<--
JP 04071919	B4	19921116			
AT 42956	E	19890515	AT 1982-402378	19821223	<--
SU 1470196	A3	19890330	SU 1982-3528900	19821227	<--
DK 8205756	A	19821228	DK 1982-5756	19821228	<--
PRAI	FR 1981-8472	19810428	<--		
	FR 1981-24132	19811223	<--		
	FR 1982-621	19820115	<--		
	FR 1982-1575	19820201	<--		
	FR 1982-2526	19820216	<--		
	EP 1982-400770	19820428	<--		
	WO 1982-FR76	19820428	<--		
	FR 1982-9392	19820528	<--		
	FR 1982-10891	19820622	<--		
	FR 1982-10892	19820622	<--		
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	FR 1982-15803	19820920	<--		
	FR 1982-15804	19820920	<--		
	FR 1982-18001	19821027	<--		
	EP 1982-402378	19821223	<--		

GI For diagram(s), see printed CA Issue.

AB Disaccharides I (R = H, SO<sub>3</sub>M, Ac; R<sub>1</sub> = H; R<sub>2</sub> = N<sub>3</sub>, amino; R<sub>3</sub> = H, alkyl, cation; M = cation) were prepd. Thus, Me 2,3-di-O-benzyl-.alpha.-D-glucopyranoside was protected and oxidized to the acid which was converted to its Me ester and treated with azidobromoglucose deriv. to give I (R = Ac, R<sub>1</sub> = CH<sub>2</sub>Ph, R<sub>2</sub> = N<sub>3</sub>, R<sub>3</sub> = Me). Sapon. of the latter compd. and treatment with Me<sub>3</sub>N-SO<sub>3</sub>, and hydrogenation gave I (R = SO<sub>3</sub>Na, R<sub>1</sub> = H, R<sub>2</sub> = NH<sub>2</sub>, R<sub>3</sub> = Me) which was converted to I [R = SO<sub>3</sub>Na, R<sub>1</sub> = H, R<sub>2</sub> = NHAc, NH<sub>2</sub>SO<sub>3</sub>Na (II), R<sub>3</sub> = Na]. II had a factor of Xa inhibiting activity of 1000-2000 units/g.

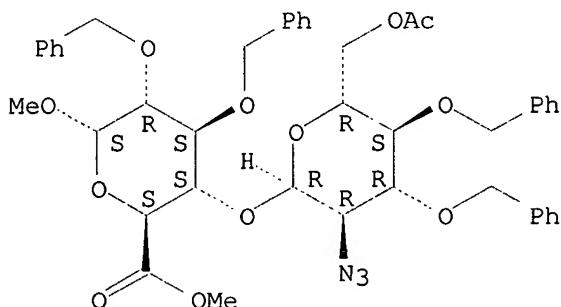
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RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation)  
(prepn. and sapon. of)

RN 85750-89-6 HCAPLUS

CN .alpha.-D-Glucopyranosiduronic acid, methyl 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

## Absolute stereochemistry.



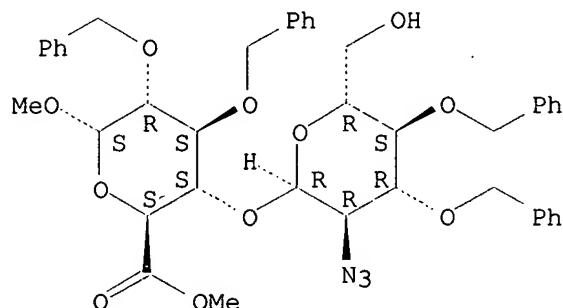
IT 85743-92-6P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation)  
(prepn. and sulfonylation of)

RN 85743-92-6 HCAPLUS

CN .alpha.-D-Glucopyranosiduronic acid, methyl 4-O-[2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-2,3-bis-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



=> d all hitstr tot

L38 ANSWER 1 OF 2 HCPLUS COPYRIGHT 2002 ACS

AN 2002:574867 HCPLUS

DN 137:125357

TI Solid- and solution-phase combinatorial libraries synthesis of heparin and other glycosaminoglycans as potential receptors

IN Seeberger, Peter H.; Orgueira, Hernan; Schell, Peter

PA Massachusetts Institute of Technology, USA

SO PCT Int. Appl., 131 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM A61K

CC 33-8 (Carbohydrates)

Section cross-reference(s): 1, 3

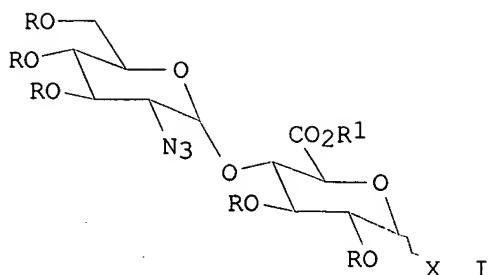
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002058633	A2	20020801	WO 2002-US1772	20020122
	WO 2002058633	A3	20021017		
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			

PRAI US 2001-263621P P 20010123

OS MARPAT 137:125357

GI



AB Described is a modular, general synthetic strategy for the prepn. in soln. and on a solid support of heparin, heparin-like glycosaminoglycans, glycosaminoglycans and non-natural analogs, e.g. I, wherein X is OH, acyloxy, silyloxy, halide, alkylthio, arylthio, alkoxy, OC(NH)CC13; R is H, alkyl, aryl, arylalkyl, heteroarylalkyl, silyl, acyl, alkenyloxycarbonyl, aralkyloxycarbonyl; R1 is H, alkyl, aryl, arylalkyl, heteroarylalkyl and derivs. Addnl., the modular strategy provides the basis for the prepn. of combinatorial libraries and parallel libraries of defined glycosaminoglycan oligosaccharides. The defined glycosaminoglycan structures may be used in high-throughput screening expts. to identify carbohydrate sequences that regulate a host of recognition and signal-transduction processes. The detn. of specific sequences involved in receptor binding holds great promise for the development of mol. tools which will allow modulation of processes underlying viral entry, angiogenesis, kidney diseases and diseases of the control nervous system (no data). Notably, the present invention enables the automated synthesis of glycosaminoglycans in much the same fashion that peptides and oligonucleotides are currently assembled. Thus, n-pentenyl (2-deoxy-2-sodium sulfonatamido-3,4,6-tri-O-sodium sulfonato-.alpha.-D-glucopyranosyl)-(1.fwdarw.4)-(sodium 2-O-sodium sulfonato-.alpha.-D-idopyranosyluronate)-(1.fwdarw.4)-(2-deoxy-2-sodium sulfonatamido-6-O-sodium sulfonato-.alpha.-D-glucopyranosyl)-(1.fwdarw.4)-sodium 2-O-sodium sulfonato-.beta.-D-glucopyranosiduronate was prepd. as potential receptors.

ST solid phase prepn combinatorial glycosaminoglycan oligosaccharide uronate heparin

IT Combinatorial library

Solid phase synthesis

(solid-phase combinatorial libraries synthesis of glycosaminoglycans as potential receptors)

IT Oligosaccharides, preparation

Receptors

RL: CPN (Combinatorial preparation); IMF (Industrial manufacture); SPN (Synthetic preparation); CMBI (Combinatorial study); PREP (Preparation) (solid-phase combinatorial libraries synthesis of glycosaminoglycans as potential receptors)

IT	80321-89-7P	87326-73-6P	92955-17-4P	99049-65-7P	120312-09-6P
	138889-14-2P	138923-10-1P	154920-34-0P	154970-28-2P	385422-21-9P
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	444118-44-9P	444118-45-0P	444118-47-2P	444118-48-3P	
	<b>444118-49-4P</b>	444118-50-7P	444118-51-8P	<b>444118-52-9P</b>	
	444118-53-0P	444118-54-1P	444118-55-2P	<b>444118-56-3P</b>	
	<b>444118-57-4P</b>	<b>444118-58-5P</b>	<b>444118-59-6P</b>		
	<b>444118-60-9P</b>	<b>444118-61-0P</b>	<b>444118-62-1P</b>		
	<b>444118-63-2P</b>	<b>444118-64-3P</b>	<b>444118-65-4P</b>		
	<b>444118-66-5P</b>	<b>444118-67-6P</b>	<b>444118-68-7P</b>		
	<b>444118-69-8P</b>	<b>444118-70-1P</b>	<b>444118-71-2P</b>		

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**444118-75-6P 444118-76-7P 444118-77-8P**  
**444118-78-9P 444118-79-0P 444118-81-4P 444118-82-5P**  
**444118-83-6P 444118-84-7P 444118-85-8P 444118-87-0P**  
**444118-88-1P 444118-89-2P 444118-90-5P**  
**444118-91-6P 444118-94-9P 444118-99-4P 444119-00-0P**  
**444119-01-1P 444119-02-2P 444119-03-3P 444119-04-4P**  
**444119-05-5P 444119-06-6P 444119-07-7P**  
**444119-08-8P 444119-09-9P 444119-10-2P 444119-11-3P 444119-12-4P**  
**444119-13-5P 444119-14-6P 444119-15-7P 444119-22-6P**  
**444119-23-7P 444119-41-9P**

RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (solid-phase combinatorial libraries synthesis of glycosaminoglycans as potential receptors)

IT 87326-76-9P 444118-43-8P 444118-46-1P **444118-80-3P**  
 444118-86-9P 444118-92-7P 444118-93-8P 444118-95-0P 444118-96-1P  
 444118-97-2P 444118-98-3P **444119-16-8P 444119-17-9P**  
**444119-18-0P 444119-19-1P 444119-20-4P**  
**444119-21-5P**

RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)  
 (solid-phase combinatorial libraries synthesis of glycosaminoglycans as potential receptors)

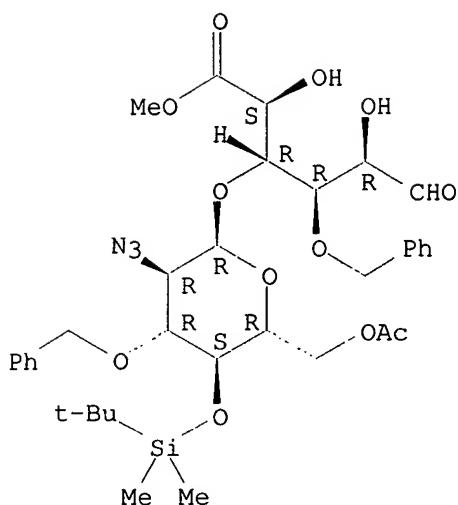
IT 56-40-6, Glycine, reactions 66-84-2, Glucosamine hydrochloride  
 582-52-5 171032-74-9  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (solid-phase combinatorial libraries synthesis of glycosaminoglycans as potential receptors)

IT **444118-49-4P 444118-52-9P 444118-56-3P**  
**444118-57-4P 444118-58-5P 444118-59-6P**  
**444118-60-9P 444118-61-0P 444118-62-1P**  
**444118-63-2P 444118-64-3P 444118-65-4P**  
**444118-66-5P 444118-67-6P 444118-68-7P**  
**444118-69-8P 444118-70-1P 444118-71-2P**  
**444118-72-3P 444118-73-4P 444118-74-5P**  
**444118-75-6P 444118-76-7P 444118-77-8P**  
**444118-78-9P 444118-79-0P 444118-88-1P**  
**444118-89-2P 444118-90-5P 444118-91-6P**  
**444119-04-4P 444119-05-5P 444119-06-6P**  
**444119-07-7P 444119-22-6P 444119-23-7P**

RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (solid-phase combinatorial libraries synthesis of glycosaminoglycans as potential receptors)

RN 444118-49-4 HCPLUS  
 CN D-Glucuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

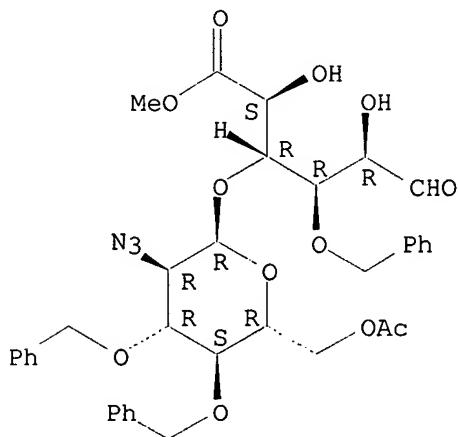
Absolute stereochemistry.



RN 444118-52-9 HCAPLUS

CN D-Glucuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

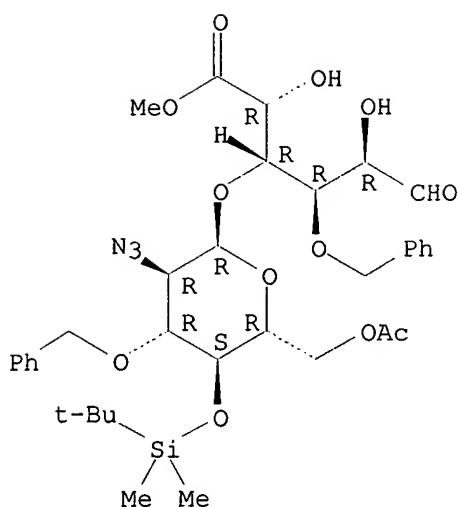
Absolute stereochemistry.



RN 444118-56-3 HCAPLUS

CN L-Iduronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

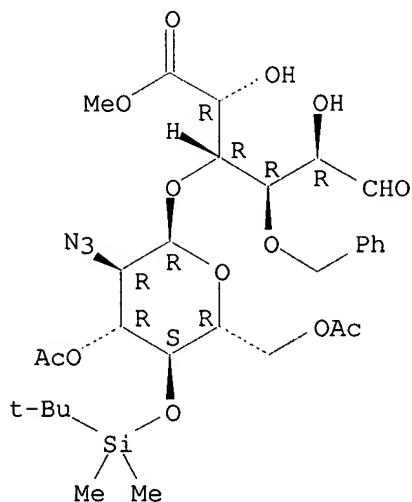
Absolute stereochemistry.



RN 444118-57-4 HCPLUS

CN L-Iduronic acid, 4-O-[3,6-di-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

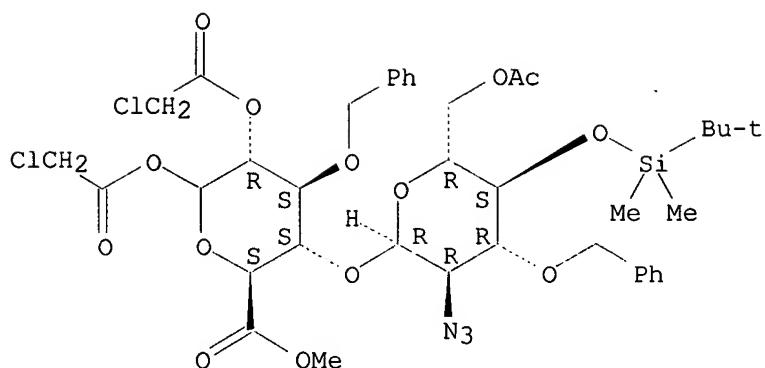
Absolute stereochemistry.



RN 444118-58-5 HCPLUS

CN D-Glucopyranuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 1,2-bis(chloroacetate) (9CI) (CA INDEX NAME)

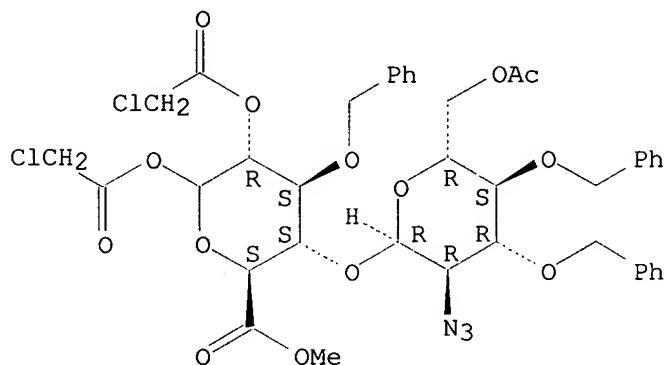
Absolute stereochemistry.



RN 444118-59-6 HCAPLUS

KN 444116 35 9 - ACID-LUS  
CN D-Glucopyranuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 1,2-bis(chloroacetate) (9CI) (CA INDEX NAME)

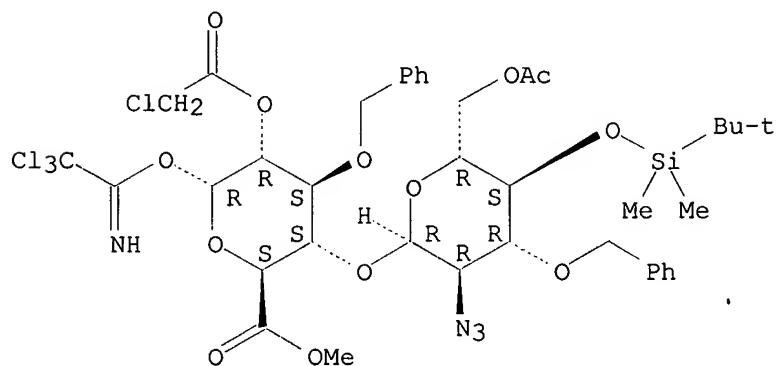
## Absolute stereochemistry.



RN 444118-60-9 HCAPLUS

alpha-D-Glucopyranuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-(chloroacetate) 1-(2,2,2-trichloroethanimidate) (9CI) (CA INDEX NAME)

### Absolute stereochemistry. Rotation (+).

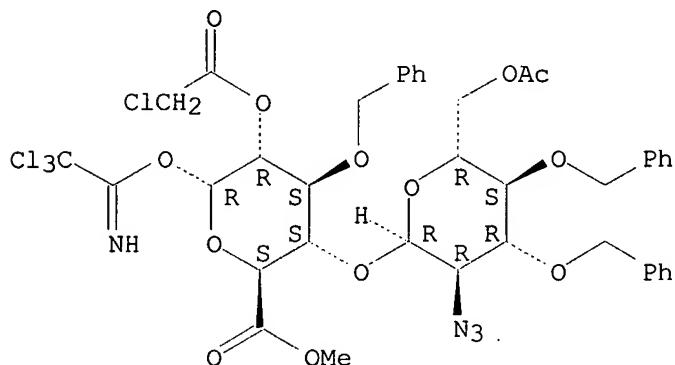


RN 444118-61-0 HCAPLUS

CN .alpha.-D-Glucopyranuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-

(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-(chloroacetate) 1-(2,2,2-trichloroethanimidate) (9CI) (CA INDEX NAME)

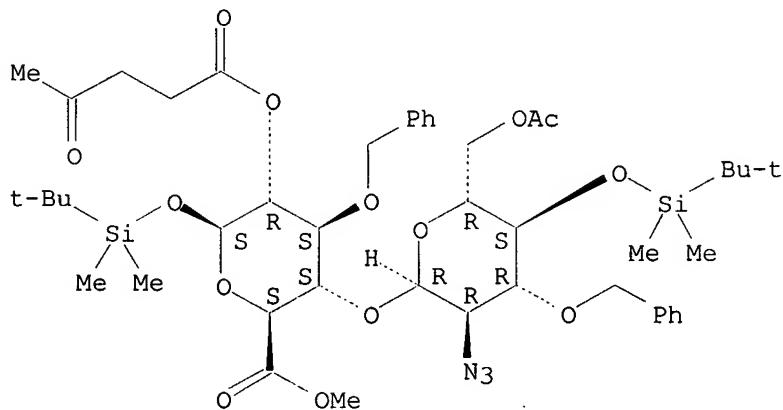
Absolute stereochemistry.



RN 444118-62-1 HCPLUS

CN .beta.-D-Glucopyranuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-1-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-, methyl ester, 2-(4-oxopentanoate) (9CI) (CA INDEX NAME)

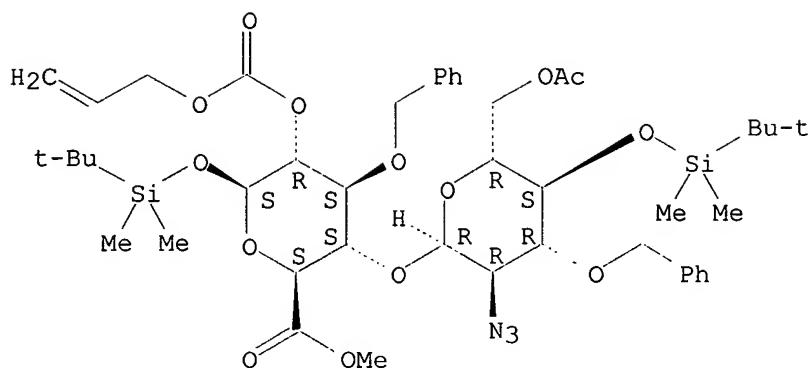
Absolute stereochemistry.



RN 444118-63-2 HCPLUS

CN .beta.-D-Glucopyranuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-1-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-, methyl ester, 2-(2-propenyl carbonate) (9CI) (CA INDEX NAME)

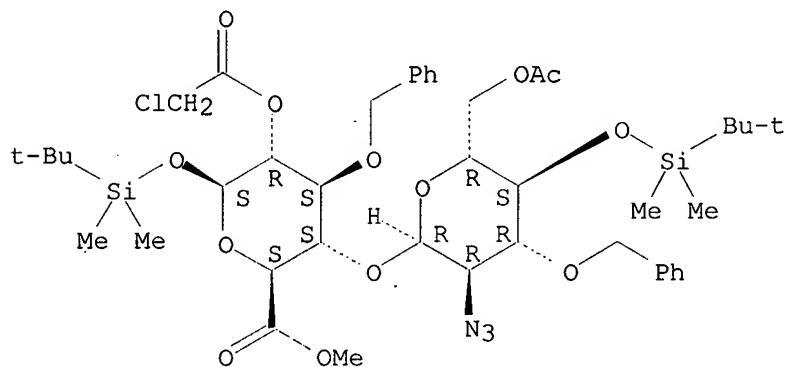
Absolute stereochemistry. Rotation (+).



RN 444118-64-3 HCAPLUS

RN 44110-04-5 ACACLES  
CN .beta.-D-Glucopyranuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl).-alpha.-D-glucopyranosyl]-1-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-, methyl ester, 2-(chloroacetate) (9CI) (CA INDEX NAME)

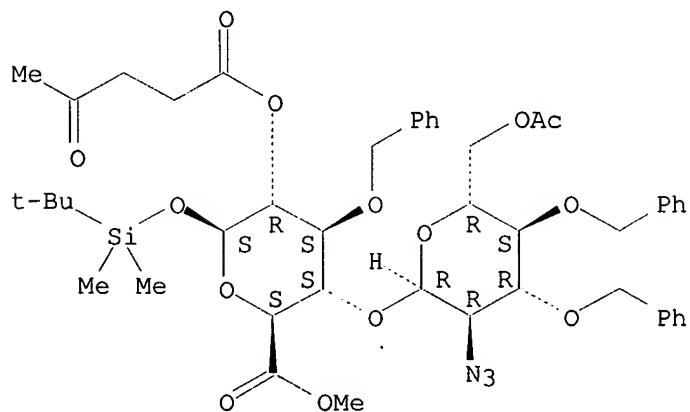
Absolute stereochemistry. Rotation (+).



RN 444118-65-4 HCAPLUS

CN .beta.-D-Glucopyranuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-1-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-, methyl ester, 2-(4-oxopentanoate) (9CI) (CA INDEX NAME)

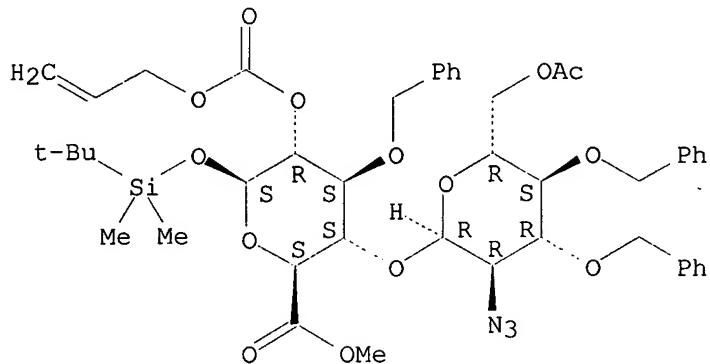
Absolute stereochemistry. Rotation (+).



RN 444118-66-5 HCPLUS

CN .beta.-D-Glucopyranuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-1-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-, methyl ester, 2-(2-propenyl carbonate) (9CI) (CA INDEX NAME)

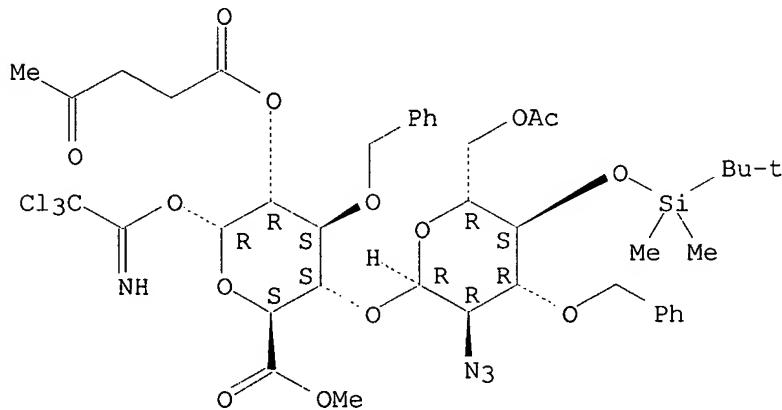
Absolute stereochemistry. Rotation (+).



RN 444118-67-6 HCPLUS

CN .alpha.-D-Glucopyranuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-(4-oxopentanoate) 1-(2,2,2-trichloroethanimidate) (9CI) (CA INDEX NAME)

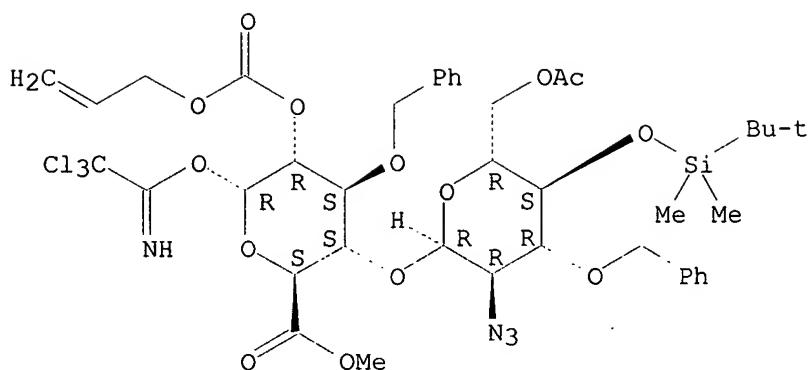
Absolute stereochemistry. Rotation (+).



RN 444118-68-7 HCPLUS

CN .alpha.-D-Glucopyranuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-(2-propenyl carbonate) 1-(2,2,2-trichloroethanimidate) (9CI) (CA INDEX NAME)

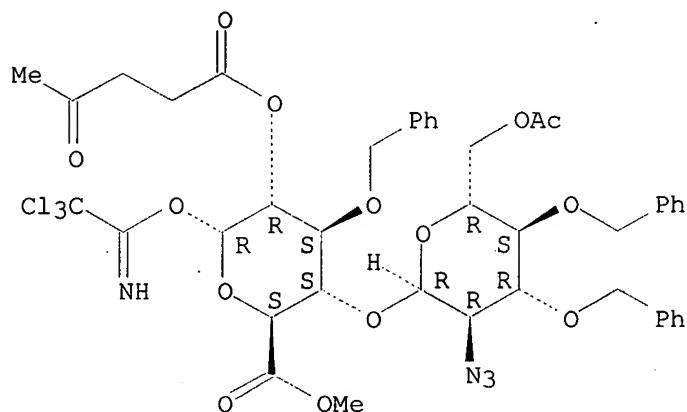
Absolute stereochemistry. Rotation (+).



RN 444118-69-8 HCPLUS

CN .alpha.-D-Glucopyranuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-(4-oxopentanoate) 1-(2,2,2-trichloroethanimidate) (9CI) (CA INDEX NAME)

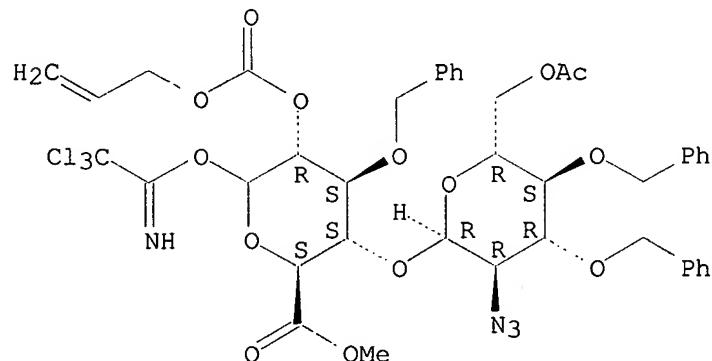
Absolute stereochemistry. Rotation (+).



RN 444118-70-1 HCPLUS

CN D-Glucopyranuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-(2-propenyl carbonate) 1-(2,2,2-trichloroethanimidate) (9CI) (CA INDEX NAME)

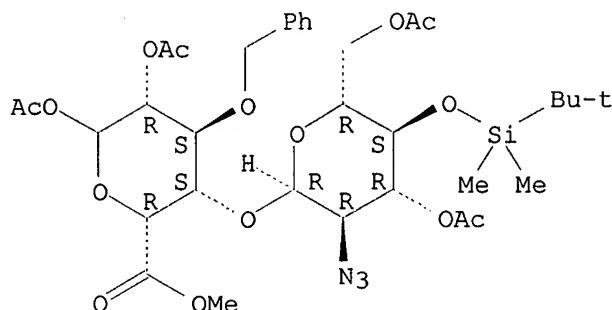
Absolute stereochemistry.



RN 444118-71-2 HCPLUS

CN L-Idopyranuronic acid, 4-O-[3,6-di-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 1,2-diacetate (9CI) (CA INDEX NAME)

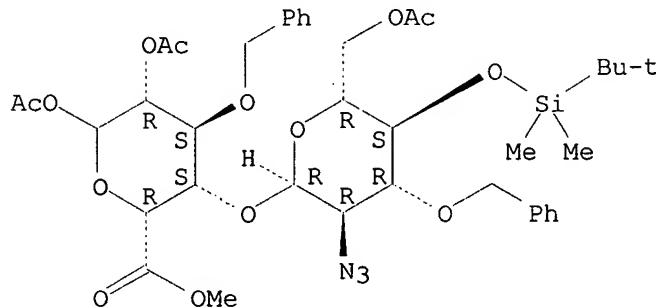
Absolute stereochemistry.



RN 444118-72-3 HCPLUS

CN L-Idopyranuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 1,2-diacetate (9CI) (CA INDEX NAME)

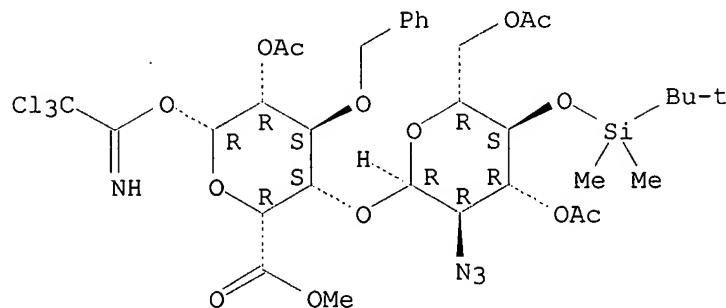
Absolute stereochemistry.



RN 444118-73-4 HCPLUS

CN .beta.-L-Idopyranuronic acid, 4-O-[3,6-di-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-acetate 1-(2,2,2-trichloroethanimidate) (9CI) (CA INDEX NAME)

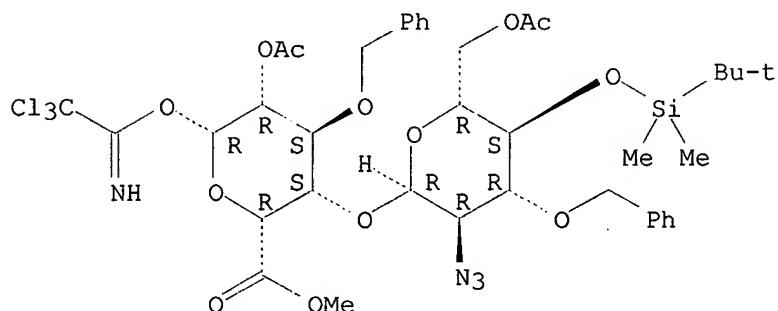
Absolute stereochemistry. Rotation (+).



RN 444118-74-5 HCPLUS

CN .beta.-L-Idopyranuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-acetate 1-(2,2,2-trichloroethanimidate) (9CI) (CA INDEX NAME)

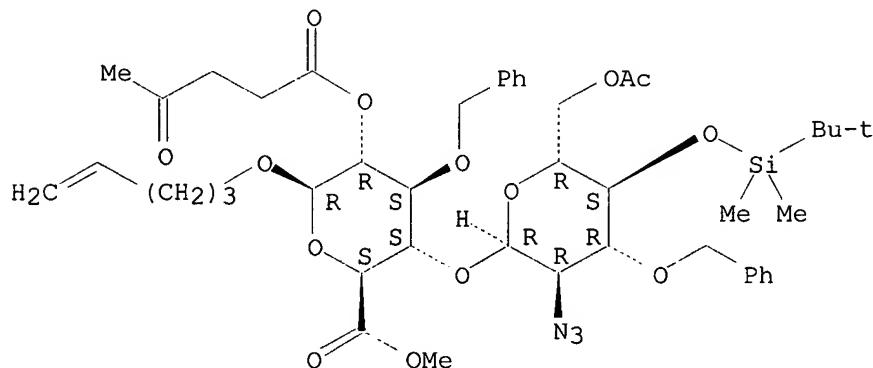
Absolute stereochemistry. Rotation (+).



RN 444118-75-6 HCAPLUS

beta-D-Glucopyranosiduronic acid, 4-pentenyl 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-, methyl ester, 2-(4-oxopentanoate) (9CI) (CA INDEX NAME)

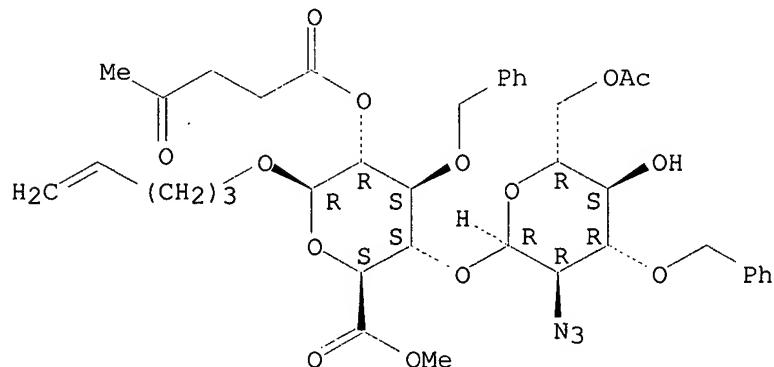
### Absolute stereochemistry. Rotation (+).



RN 444118-76-7 HCAPLUS

CN .beta.-D-Glucopyranosiduronic acid, 4-pentenyl 4-O-[6-O-acetyl-2-azido-2-deoxy-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-(4-oxopentanoate) (9CI) (CA INDEX NAME)

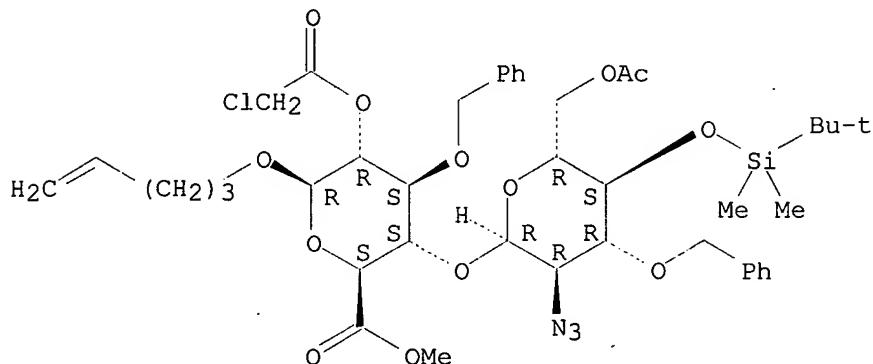
Absolute stereochemistry. Rotation (+).



RN 444118-77-8 HCPLUS

CN .beta.-D-Glucopyranosiduronic acid, 4-pentenyl 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-(chloroacetate) (9CI) (CA INDEX NAME)

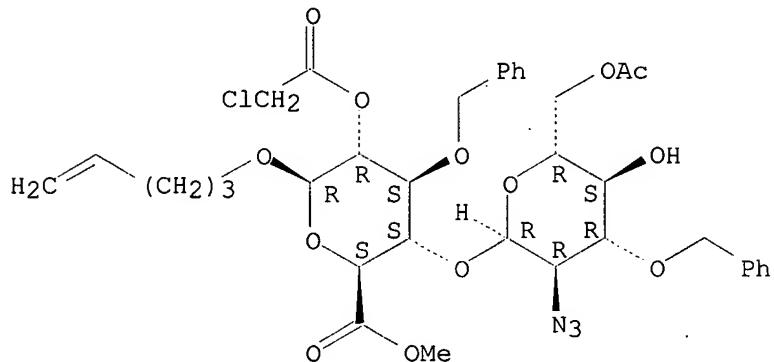
Absolute stereochemistry. Rotation (+).



RN 444118-78-9 HCPLUS

CN .beta.-D-Glucopyranosiduronic acid, 4-pentenyl 4-O-[6-O-acetyl-2-azido-2-deoxy-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-(chloroacetate) (9CI) (CA INDEX NAME)

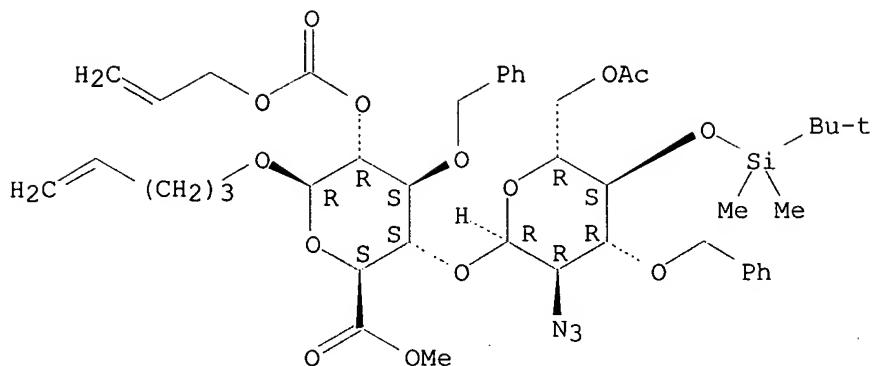
Absolute stereochemistry. Rotation (+).



RN 444118-79-0 HCPLUS

CN .beta.-D-Glucopyranosiduronic acid, 4-pentenyl 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-(2-propenyl carbonate) (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (+).

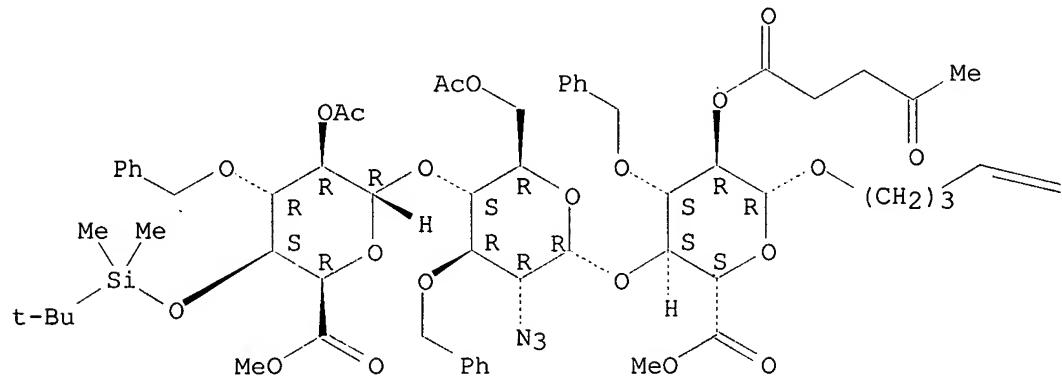


RN 444118-88-1 HCPLUS

CN .beta.-D-Glucopyranosiduronic acid, 4-pentenyl O-2-O-acetyl-4-O-[(1,1-dimethylallyl)dimethylsilyl]-6-methyl-3-O-(phenylmethyl)-.alpha.-L-idopyranuronosyl-(1.fwdarw.4)-O-6-O-acetyl-2-azido-2-deoxy-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-3-O-(phenylmethyl)-, methyl ester, 2-(4-oxopentanoate) (9CI) (CA INDEX NAME)

Absolute stereochemistry.

PAGE 1-A



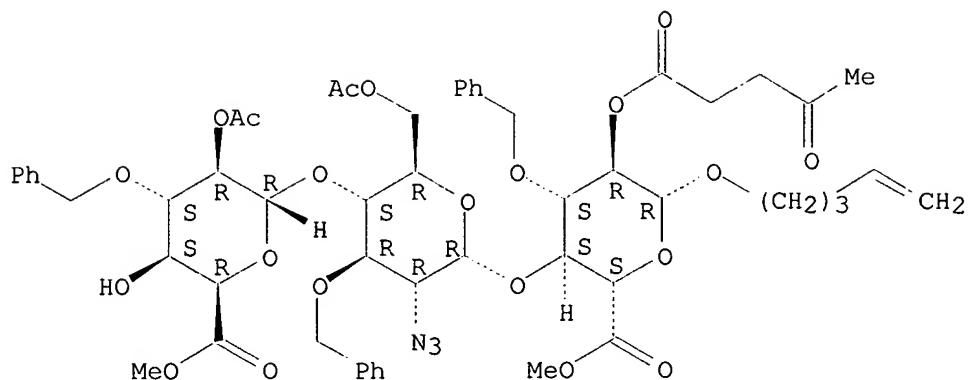
PAGE 1-B

-CH<sub>2</sub>

RN 444118-89-2 HCPLUS

CN .beta.-D-Glucopyranosiduronic acid, 4-pentenyl O-2-O-acetyl-6-methyl-3-O-(phenylmethyl)-.alpha.-L-idopyranuronosyl-(1.fwdarw.4)-O-6-O-acetyl-2-azido-2-deoxy-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-3-O-(phenylmethyl)-, methyl ester, 2-(4-oxopentanoate) (9CI) (CA INDEX NAME)

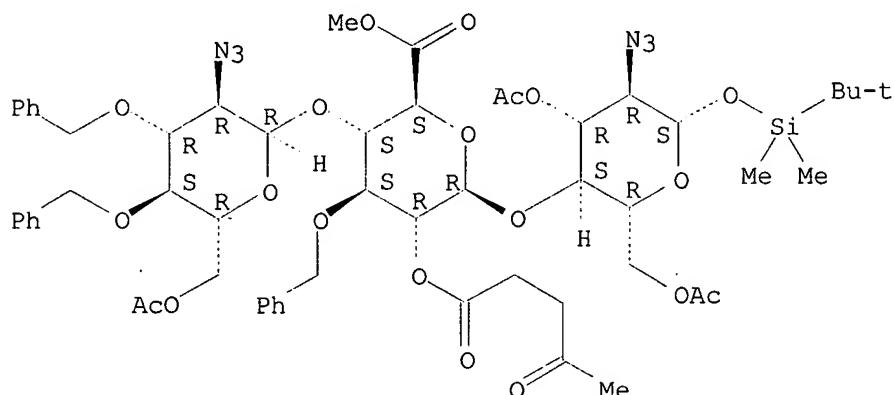
Absolute stereochemistry.



RN 444118-90-5 HCAPLUS

CN .beta.-D-Glucopyranose, O-6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-O-2-O-(1,4-dioxopentyl)-6-methyl-3-O-(phenylmethyl)-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-2-azido-2-deoxy-1-O-[(1,1-dimethylethyl)dimethylsilyl]-, 3,6-diacetate (9CI) (CA INDEX NAME)

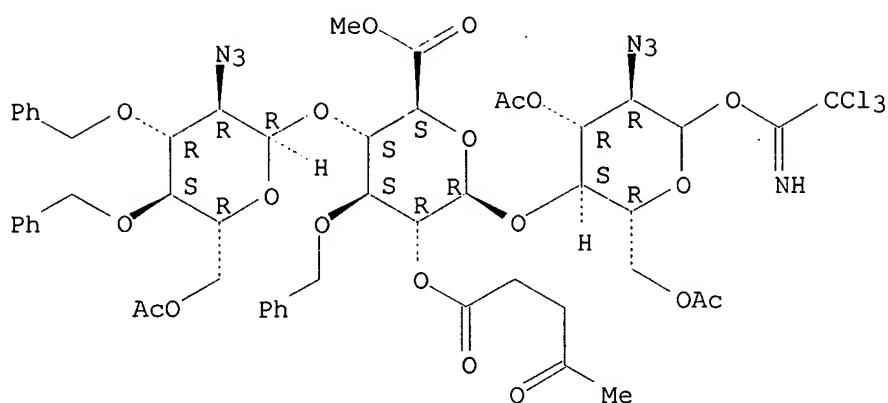
Absolute stereochemistry.



RN 444118-91-6 HCAPLUS

CN D-Glucopyranose, O-6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl-(1.fwdarw.4)-O-2-O-(1,4-dioxopentyl)-6-methyl-3-O-(phenylmethyl)-.beta.-D-glucopyranuronosyl-(1.fwdarw.4)-2-azido-2-deoxy-, 3,6-diacetate 1-(2,2,2-trichloroethanimidate) (9CI) (CA INDEX NAME)

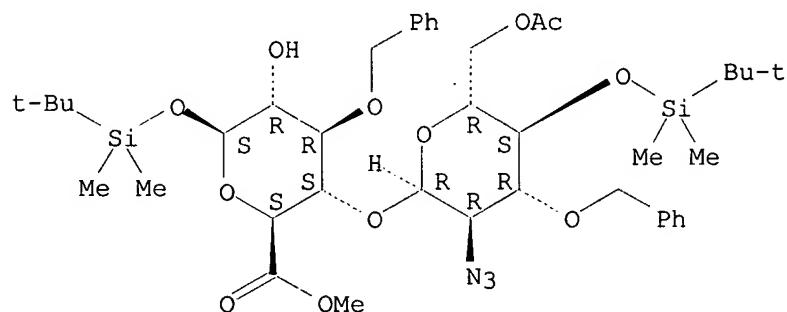
Absolute stereochemistry.



RN 444119-04-4 HCAPLUS

CN .beta.-D-Glucopyranuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-1-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

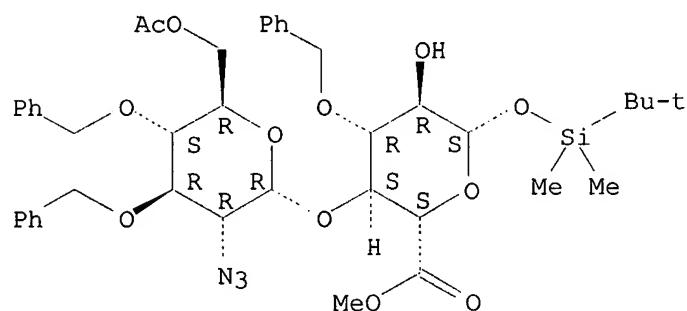
Absolute stereochemistry. Rotation (+).



RN 444119-05-5 HCAPLUS

CN .beta.-D-Glucopyranuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-1-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

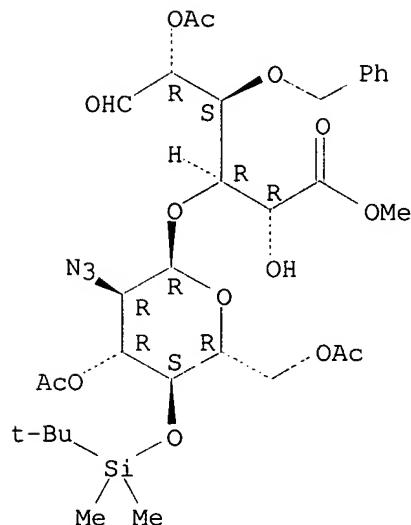
Absolute stereochemistry. Rotation (+).



RN 444119-06-6 HCAPLUS

CN L-Iduronic acid, 4-O-[3,6-di-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-acetate (9CI) (CA INDEX NAME)

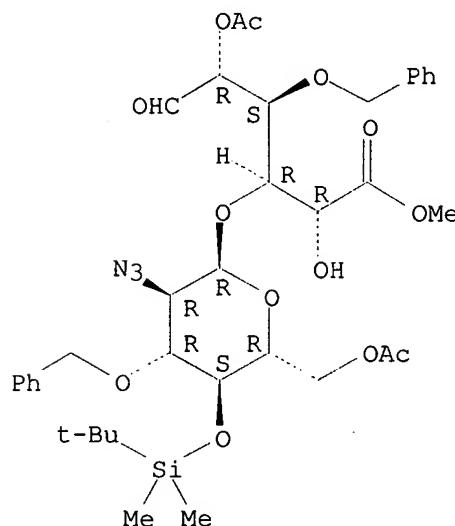
### Absolute stereochemistry.



RN 444119-07-7 HCAPLUS

CN L-Iduronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-acetate (9CI) (CA INDEX NAME)

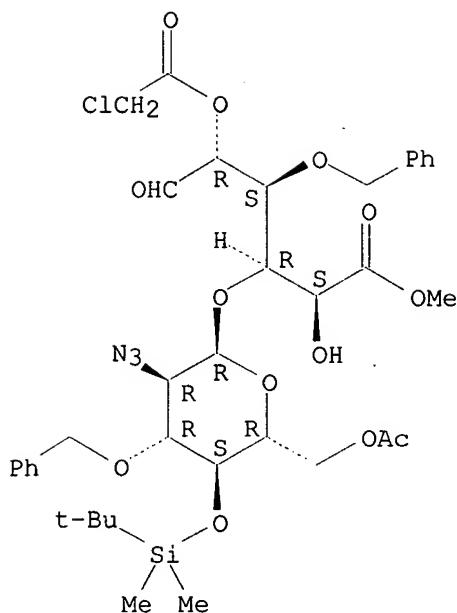
### Absolute stereochemistry.



RN 444119-22-6 HCAPLUS

CN D-Glucuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-(chloroacetate) (9CI) (CA INDEX NAME)

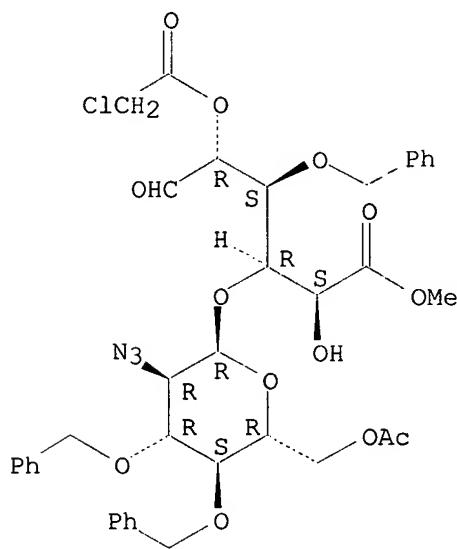
### Absolute stereochemistry.



RN 444119-23-7 HCPLUS

CN D-Glucuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-(chloroacetate) (9CI) (CA INDEX NAME)

Absolute stereochemistry.



IT 444118-80-3P 444119-16-8P 444119-17-9P

444119-18-0P 444119-19-1P 444119-20-4P

444119-21-5P

RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)

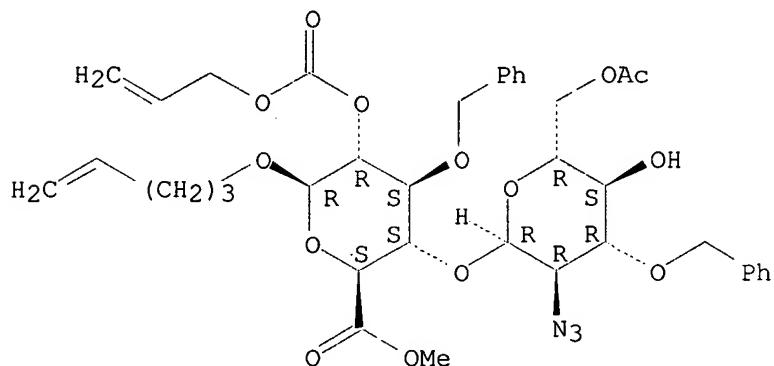
(solid-phase combinatorial libraries synthesis of glycosaminoglycans as potential receptors)

RN 444118-80-3 HCPLUS

CN .beta.-D-Glucopyranosiduronic acid, 4-pentenyl 4-O-[6-O-acetyl-2-

deoxy-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-(2-propenyl carbonate) (9CI) (CA INDEX NAME)

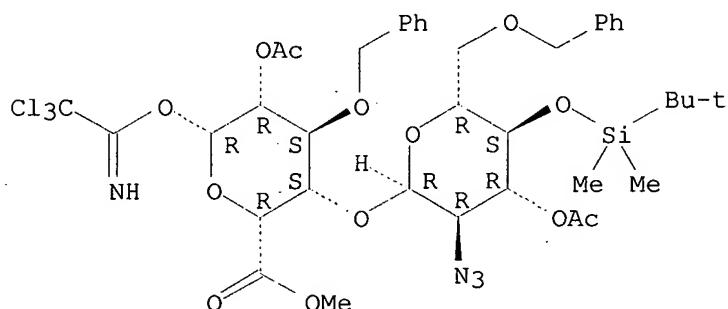
Absolute stereochemistry. Rotation (+).



RN 444119-16-8 HCPLUS

CN .beta.-L-Idopyranuronic acid, 4-O-[3-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-6-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-acetate 1-(2,2,2-trichloroethanimidate) (9CI) (CA INDEX NAME)

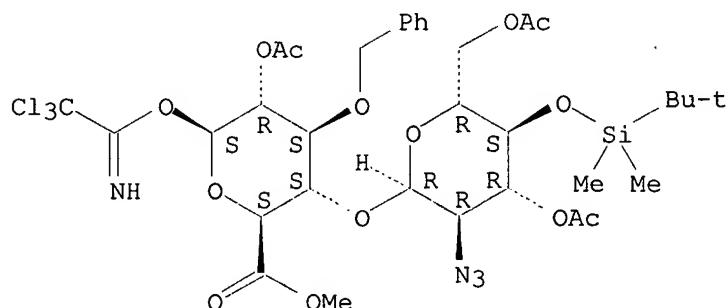
Absolute stereochemistry.



RN 444119-17-9 HCPLUS

CN .beta.-D-Glucopyranuronic acid, 4-O-[3,6-di-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-acetate 1-(2,2,2-trichloroethanimidate) (9CI) (CA INDEX NAME)

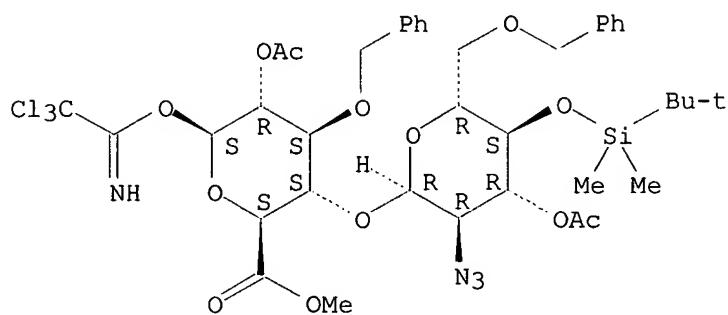
Absolute stereochemistry.



RN 444119-18-0 HCPLUS

CN .beta.-D-Glucopyranuronic acid, 4-O-[3-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-6-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-acetate 1-(2,2,2-trichloroethanimidate) (9CI) (CA INDEX NAME)

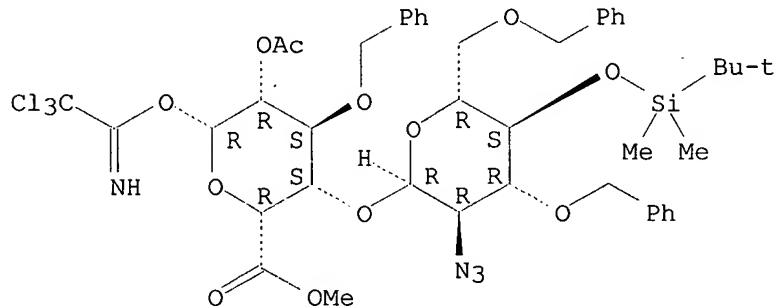
## Absolute stereochemistry.



RN 444119-19-1 HCAPLUS

CN .beta.-L-Idopyranuronic acid, 4-O-[2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-3,6-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-acetate 1-(2,2,2-trichloroethanimidate) (9CI) (CA INDEX NAME)

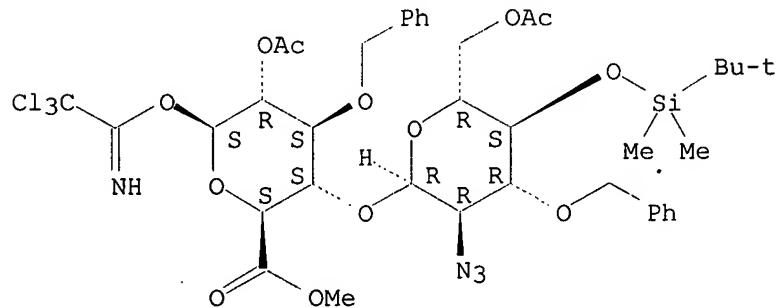
## Absolute stereochemistry.



RN 444119-20-4 HCAPLUS

CN .beta.-D-Glucopyranuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl).alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-acetate 1-(2,2,2-trichloroethanimidate) (9CI) (CA INDEX NAME)

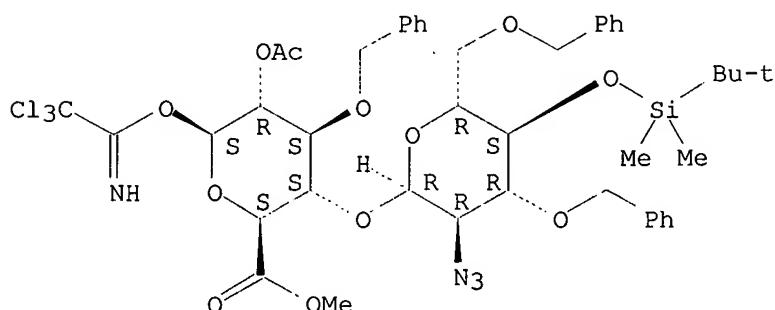
## Absolute stereochemistry.



RN 444119-21-5 HCAPLUS

CN .beta.-D-Glucopyranuronic acid, 4-O-[2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-3,6-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-acetate 1-(2,2,2-trichloroethanimidate) (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L38 ANSWER 2 OF 2 HCPLUS COPYRIGHT 2002 ACS

AN 2002:501360 HCPLUS

DN 137:263256

TI Conformational locking of the glycosyl acceptor for stereocontrol in the key step in the synthesis of heparin

AU Orgueira, Hernan A.; Bartolozzi, Alessandra; Schell, Peter; Seeberger, Peter H.

CS Department of Chemistry, Massachusetts Institute of Technology, Cambridge, MA, 02139, USA

SO Angewandte Chemie, International Edition (2002), 41(12), 2128-2131 *check*  
CODEN: ACIEF5; ISSN: 1433-7851

PB Wiley-VCH Verlag GmbH

DT Journal

LA English

CC 33-8 (Carbohydrates)

AB A novel concept for the stereochem. control in the key step for heparin synthesis is reported. Locking the conformation of the glucuronic acid acceptor allowed the completely selective prepn. of the desired cis glycosides. Several key disaccharide chiral synthons, previously prep'd. as anomeric mixts., have been prep'd. utilizing this approach.

ST oligosaccharide chiral synthon stereoselective prepn heparin

IT Synthons

(chiral; stereoselective prepn. of oligosaccharide chiral synthons, to be used in the key step in the synthesis of heparin)

IT Conformation

Stereochemistry

(stereoselective prepn. of oligosaccharide chiral synthons, to be used in the key step in the synthesis of heparin)

IT Oligosaccharides, preparation

RL: SPN (Synthetic preparation); PREP (Preparation)

(stereoselective prepn. of oligosaccharide chiral synthons, to be used in the key step in the synthesis of heparin)

IT 9005-49-6P, Heparin, preparation

RL: PNU (Preparation, unclassified); PREP (Preparation)

(stereoselective prepn. of oligosaccharide chiral synthons, to be used in the key step in the synthesis of heparin)

IT 92955-17-4 135415-92-8 154920-28-2 243982-79-8 356068-08-1

444118-39-2 463350-33-6 463350-35-8 463350-36-9 463350-38-1

463350-40-5 463350-43-8

RL: RCT (Reactant); RACT (Reactant or reagent)

(stereoselective prepn. of oligosaccharide chiral synthons, to be used in the key step in the synthesis of heparin)

IT 444118-41-6P 444118-42-7P 444118-44-9P 444118-45-0P 444118-47-2P  
 444118-48-3P 444118-50-7P 444118-51-8P 444118-53-0P 444118-54-1P  
 444118-55-2P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(stereoselective prepn. of oligosaccharide chiral synthons, to be used in the key step in the synthesis of heparin)

IT 87326-73-6P 87326-76-9P 444118-43-8P 444118-46-1P  
 444118-49-4P 444118-52-9P 444118-56-3P  
 444118-57-4P 463350-34-7P 463350-37-0P  
 463350-39-2P 463350-41-6P 463350-42-7P

RL: SPN (Synthetic preparation); PREP (Preparation)

(stereoselective prepn. of oligosaccharide chiral synthons, to be used in the key step in the synthesis of heparin)

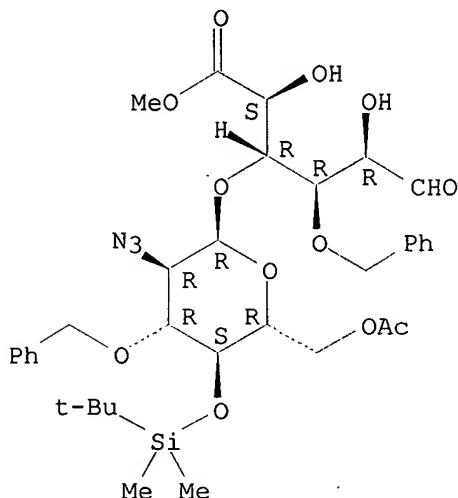
RE.CNT 52 THERE ARE 52 CITED REFERENCES AVAILABLE FOR THIS RECORD

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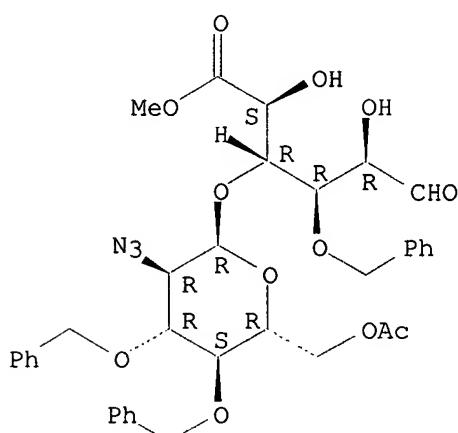
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 IT 444118-49-4P 444118-52-9P 444118-56-3P  
 444118-57-4P 463350-34-7P 463350-37-0P  
 463350-39-2P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (stereoselective prepn. of oligosaccharide chiral synthons, to be used  
 in the key step in the synthesis of heparin)  
 RN 444118-49-4 HCPLUS  
 CN D-Glucuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-  
 dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-  
 3-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



RN 444118-52-9 HCPLUS  
 CN D-Glucuronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-3,4-bis-O-  
 (phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester  
 (9CI) (CA INDEX NAME)

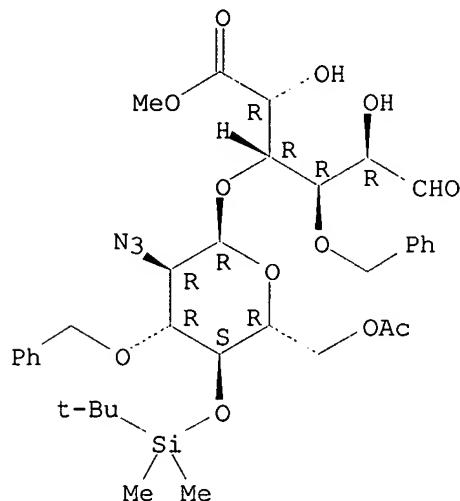
Absolute stereochemistry.



RN 444118-56-3 HCAPLUS

CN L-Iduronic acid, 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

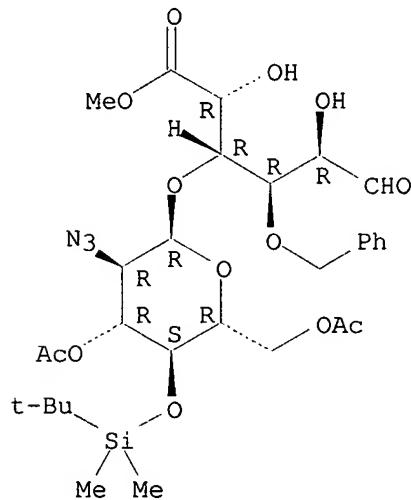
Absolute stereochemistry.



RN 444118-57-4 HCAPLUS

CN L-Iduronic acid, 4-O-[3,6-di-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

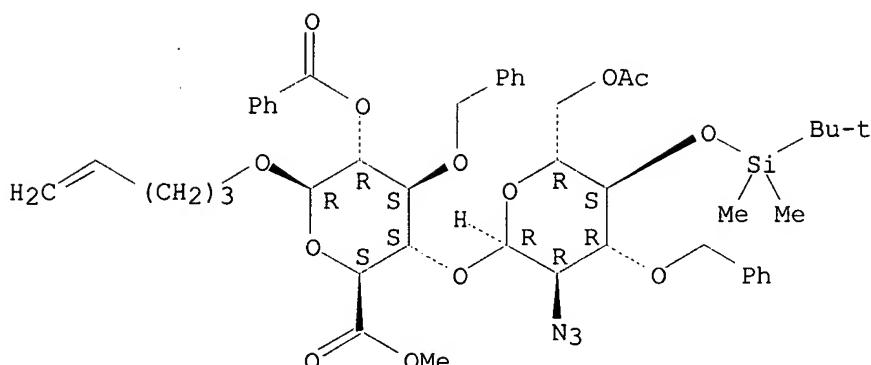
Absolute stereochemistry.



RN 463350-34-7 HCAPLUS

CN .beta.-D-Glucopyranosiduronic acid, 4-pentenyl 4-O-[6-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-3-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-benzoate (9CI) (CA INDEX NAME)

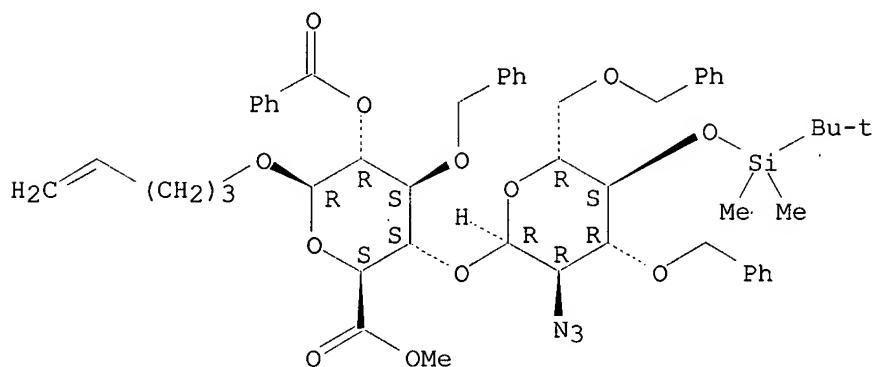
Absolute stereochemistry.



RN 463350-37-0 HCAPLUS

CN .beta.-D-Glucopyranosiduronic acid, 4-pentenyl 4-O-[2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-3,6-bis-O-(phenylmethyl)-.alpha.-D-glucopyranosyl]-3-O-(phenylmethyl)-, methyl ester, 2-benzoate (9CI) (CA INDEX NAME)

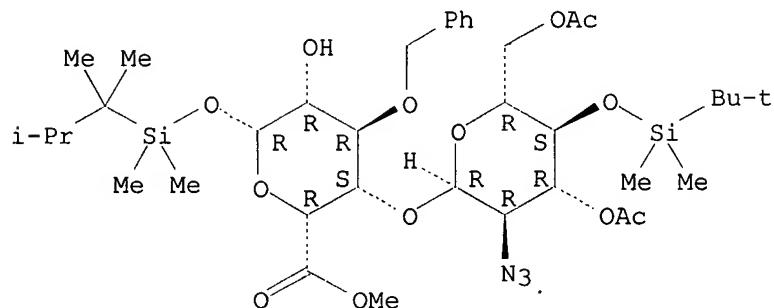
Absolute stereochemistry.



RN 463350-39-2 HCAPLUS

CN .beta.-L-Idopyranuronic acid, 4-O-[3,6-di-O-acetyl-2-azido-2-deoxy-4-O-[(1,1-dimethylethyl)dimethylsilyl]-.alpha.-D-glucopyranosyl]-1-O-[dimethyl(1,1,2-trimethylpropyl)silyl]-3-O-(phenylmethyl)-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



=> d his

(FILE 'HOME' ENTERED AT 09:18:23 ON 19 NOV 2002)  
 SET COST OFF

FILE 'REGISTRY' ENTERED AT 09:18:35 ON 19 NOV 2002

L1 STR  
 L2 18 S L1  
 L3 296 S L1 FUL  
     SAV L3 KRISH054/A  
 L4 STR L1  
 L5 9 S L4 CSS SAM SUB=L3  
 L6 137 S L4 CSS FUL SUB=L3  
     SAV L6 KRISH054A/A  
 L7 STR L1  
 L8 STR L7  
 L9 3 S L8 CSS SAM SUB=L6  
 L10 67 S L8 CSS FUL SUB=L6  
     SAV L10 KRICH054B/A  
 L11 16 S L10 AND (C65H80N6027 OR C114H130N12041 OR C70H84N6026 OR C68H  
 L12 5 S L10 AND (C88H101N9031 OR C76H98N6026SI OR C113H133N9036 OR C6  
 L13 46 S L10 NOT L11,L12  
     DEL KRICH?/A  
     SAV L10 KRISH054B/A  
     SAV L13 KRISH054C/A  
 L14 70 S L6 NOT L10-L13  
 L15 16 S L14 AND (C55H60CL3N7018 OR C55H62N6019 OR C49H54N4015 OR C53H  
 L16 62 S L13,L15  
     SAV L16 KRISH054D/A  
 L17 54 S L14 NOT L16  
 L18 159 S L3 NOT L6  
 L19 17 S L18 AND (C42H51N3013 OR C43H64CLN3013SI2 OR C58H69N3020 OR C4  
 L20 16 S L18 AND (C54H64N3021 OR C55H67N3021 OR C56H62CLN3021 OR C70H8  
 L21 5 S L18 AND (C58H69N3020 OR C52H65N3012SI OR C45H45CL3N4013 OR C5  
 L22 21 S L20,L21  
     SAV L22 KRISH054E/A

FILE 'HCAOLD' ENTERED AT 10:51:45 ON 19 NOV 2002

L23 0 S L16 OR L22

FILE 'USPATFULL, USPAT2' ENTERED AT 10:51:51 ON 19 NOV 2002

L24 6 S L16 OR L22

FILE 'HCAPLUS' ENTERED AT 10:52:25 ON 19 NOV 2002

L25 28 S L16 OR L22  
 L26 2 S L25 AND (SEEBERGER ? OR ORGUEIRA ? OR SCHELL ?)/AU  
 L27 26 S L25 AND (PD<=20010123 OR PRD<=20010123 OR AD<=20010123)  
 L28 1 S L25 NOT L26,L27  
 L29 25 S L27 NOT L26

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FILE 'USPATFULL, USPAT2' ENTERED AT 10:55:31 ON 19 NOV 2002

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 SEL RN L26

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 L34 69 S L31 NOT L32  
 L35 48 S L34 AND OC5/ES

FILE 'HCAPLUS' ENTERED AT 11:05:28 ON 19 NOV 2002

L36 1 S L33  
L37 1 S L36 AND L26  
L38 2 S L26, L37